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Student Attitudes Toward Social Media Technology as an
Enhancement to Language Acquisition

Meg Sorensen

A thesis submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of
Master of Arts

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ABSTRACT

Student Attitudes Toward Social Media Technology as an Enhancement to Language Acquisition

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Language students today have grown up with a plethora of technology tools at their fingertips, which has in some cases earned them the title of “digital native.” Students’ high use of technology outside the classroom has led teachers and researchers to believe that technology could be highly effective for language learners when used appropriately. Yet little is known about how students actually react to technology-based tools for language learning purposes. This study seeks to not only understand student attitudes toward technology in general, but also to see how those attitudes might affect student attitudes toward online language learning tools in a social media context. Using a design-based research approach, we implemented a curriculum that utilizes a social networking environment in which students could consume authentic language samples and practice using the language in a controlled environment. Through the analysis of pre and post surveys, it was discovered that age was the most significant predictor of student attitudes toward technology, but that the extent to which students use technology proves to be a more significant predictor when other variables are factored in. Furthermore, it was discovered that general attitudes toward technology do affect the ways in which students will react to a technology-based curriculum. Nevertheless, the way in which a curriculum is presented can be a stronger factor in predicting how the curriculum will be received.

Keywords: technology, digital literacy, language-learning, digital native, curriculum development, social networking, computer-mediated communication

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Chapter 1: Introduction

The Cloud, vlogging, 4G, phablet, “to Google,” \(\^{\nabla^{\wedge}}\@)\). Twenty years ago, these words and the concepts to which they relate today would have been incomprehensible, and yet, they have now become an integral part of life for many people. Technology has altered the way that people live so that many would be hard-pressed to do without it. According to the United States Census of 2010, 81.4% of Americans have a computer in their homes with most of those also connected to the Internet. Tools such as email and video chat have become staples in how people communicate, and with the emergence of increasingly high-tech mobile devices, people can carry these tools with them wherever they go.

As technology has evolved, it seems inevitable that it would also have made its way into classrooms of all types. This is especially true when one examines the modern language classroom. There was a time when researchers compared computer-assisted language-learning (CALL) materials against what one might call more traditional methods, but with the prevalence of technology today, the distinction between CALL and non-CALL materials has become almost irrelevant (Chapelle, 2010; Kern, 2006). What is more important now is to differentiate between effective and ineffective uses of technology in the classroom (Kern, 2006; Quinn, 2005). This paper will explore one example of a curriculum centered on technology use and the students for whom this curriculum was created.

Background of the Problem

Technology in the language classroom. Due to the difficulty of achieving proficiency in a foreign language, a period of intensive learning is required in which tasks must be stimulating enough to push students to work and learn. Many educators would agree that the best way to learn a foreign language is to immerse oneself in the target language by traveling to a country in

which the target language is spoken. Unfortunately, far too few students have the opportunity to study abroad, and so teachers must find other methods of giving their students a rich and authentic language experience. One of the ways in which they have done this in recent years is through the use of technology. PowerPoint, Wikipedia, and YouTube have become vital sources for language material in and out of the classroom, and yet when used as they generally seem to be, these tools are limited to the presentation of information and are therefore limited in their usefulness for actually learning a language.

As Web 2.0¹ has developed, a great abundance of resources to assist the language learning process has also emerged. Computer-mediated communication (CMC) tools such as email, chat, and blogging allow students the opportunity to communicate with each other or native speakers of the target language without regard to barriers such as time or distance. One specific type of CMC website, referred to as a social networking site (SNS), has recently made its way into the language classroom as a means of encouraging student interaction in the target language. Due to the recent emergence of social networking for language learning, research in this area is limited, although there have been a few pilot studies (McBride, 2009).

Although it is apparent that technology is a large part of student life as well as language teaching, we must avoid using technology for technology's sake by focusing on the pedagogical implications of its implementation (Chapelle, 2010; Hamilton, 2009; Kern, 2006). If technology is to become a truly normal part of the classroom, we need to understand both the impact that its use will have on the classroom and the ways in which it can be used most effectively (Hamilton, 2009). It is important then to know which types of technology are best suited for which skills (Stockwell, 2007).

¹ Web 2.0 is defined as the “next-gen” of Web technologies where users play an active role in the creation and editing of Online content, rather than being passive receivers of static, non-interactive pages, as was the norm with Web 1.0 (Stevenson & Liu, 2010).

A different kind of student. Students today are different from students of previous generations; they obtain and process information quickly, engage in multiple tasks at one time, and they are very comfortable with technology. Often referred to as “digital natives” (Prensky, 2001) or the iGeneration (Mills, 2011), people born within the past twenty to thirty years have also grown up learning technology. They have always had access to computers in their homes, classrooms, and frequently in their pockets. The resulting high level of exposure has helped them become experts at navigating the Internet, naturally picking up new technologies, and integrating technology into their daily lives (McBride, 2009). However, even though students are so-called “digital natives,” they may not know how best to use technology for learning purposes (Dieu & Stevens, 2007).

It is apparent that technology is not only a prevalent and important part of the lives of students, it is one that can play an important role in how they learn a second language (Conole, 2008; Kern, 2006; Stockwell, 2007; Wang, 2005). Because technology is such a large part of student life, Kinginger (2007) suggests that technology is the key to student motivation in relation to language learning. Although there have been several studies analyzing the attitudes of teachers towards technology, (Bancheri, 2006; Davison, 2005; Love, 2005; McFarlane, Hoffman, & Green, 1997), research on the students’ attitudes has been fairly scarce (Aydin, 2011; Conole, 2008). Given the rapid release of technology today, it is important to uncover and evaluate student and teacher attitudes toward technology and how they implement it most effectively for language teaching (Hamilton, 2009).

Statement of the Problem

Because of its ability to deliver immediate and varied samples of language to a wide audience, many teachers are looking to the Internet for content to use in the language classroom

(Conole, 2008; Mitchell, 2009). While it is fairly common to use online resources, such as video, still images and audio, social networking sites are just beginning to make their way into the language classroom (McBride, 2009). The existing studies in the area of social networking for language-learning purposes have been mainly concerned with implementation of new technologies rather than on the students who use them.

The rationale for testing these new technology-based tools in a language-learning environment often lies in the idea of “digital natives.” From the standpoint of a teacher who desires to engage students in the learning process, it makes logical sense to present study materials through a medium proven to be entertaining to the student population. Yet there seems to be a gap in the knowledge based on the current body of literature when it comes to understanding the variability in students with whom the technologies are being tested. There has been little research done exploring why some language students are comfortable with technology when others are not (Aydin, 2011). There is also a gap in understanding the extent to which a student’s familiarity with modern technology affects that student’s attitudes toward computer-based language-learning materials. Regardless of how much students use technology in the rest of their lives, we do not know the degree to which students are motivated by technology, nor do we fully understand the value they see in technology as a learning tool.

Purpose of the Study

The primary goal of this study was to better understand the attitudes college-age students have about technology, how they use it the classroom as well as at home, and what types of technology might increase the engagement and efficacy of a curriculum. Using a mix of qualitative and quantitative methods, I surveyed students on their attitudes toward technology for language learning and then presented them with a new type of curriculum, which used a social

networking site as its platform for content delivery. At the end of the experience, I surveyed the students again to assess their attitudes toward technology as well as to gauge their reactions to the program. I then analyzed the data to see what factors contributed to the student attitudes toward technology and the curriculum.

Research Questions

1. How much and for what purposes are students currently using Internet technologies in general?
2. What are student attitudes in the areas of
 - a. valuing technology
 - b. understanding technology, and
 - c. liking technology?
3. What are the greatest factors contributing to student comfort with technology?
4. Do students prefer their regular out of class work, or homework that includes online collaboration via a social networking site?
5. What effect do student attitudes toward technology have on their attitudes toward technology-based language-learning tools?
6. What other factors affect students' attitudes toward an innovative technology-based curriculum?

Hypotheses

Evidence suggests that students today are comfortable with technology in a way that is significantly different from previous generations. Current literature suggests that students use online technologies for everything from social interaction and entertainment to keeping up to date with current events and completing school assignments (Blake, 2008; Conole, 2008;

Kennedy & Judd, 2011; Levy & Stockwell, 2006; Wang, 2005). It seems logical that this high level of Internet usage would only occur to this extent if students believe that technology offers some value that they cannot find elsewhere. Anyone who visits a college campus can observe that college students are almost always within arm's reach of some type of technology. From this we can deduce that the biggest factor in comfort with technology will be age, although it is possible that native country may also be a factor. In addition, it is easy to conclude that generally the more comfortable a student is with technology, the higher they will regard a technology-based language-learning tool because they would better appreciate what the technology offers to the learning experience. Based on the assumption that students do enjoy using Internet technologies and that this level of enjoyment would contribute to their liking digital tools for language learning, it is also easy to conclude that students would prefer a language curriculum with some online, collaborative element. Nevertheless, it does seem highly probable that the specific type of technology, and the way in which it is used in and out of the classroom may have some effect on how it is received by the students.

Research Design and Theoretical Framework

The complexity of learning a language and the interactions that take place in and out of the classroom do not lend themselves well to empirical research with regards to implementation of a curriculum. The diversity of learners and teachers as well as the learning environment are difficult to control under the best circumstances (Yutdhana, 2005). Furthermore, when something completely new is introduced into the learning process, it is virtually impossible to keep all other factors constant. Design-based research lends itself especially well when observing CALL interactions because it allows the researcher to examine both the impact of the technology and the other factors which may be affecting the experience. By utilizing both qualitative and

quantitative measures for gathering data, it becomes possible to observe a particular learning environment over time and discern trends that may have pedagogical value in the future (Barab & Squire, 2004). These observations made in dynamic and real-world settings may also have high external validity for similar situations that cannot be achieved in more sterile and controlled experiments. It is with this in mind that we decided to implement a design-based research approach to utilizing an innovative online tool for language learning.

The tool which we used for the purposes of this study is called ESL Silver, and it is an alternate reality simulation experienced through a social network created for the purpose of assisting students in practicing their English language skills. Students follow the lives of fictional characters who relay narratives through blog posts, status updates, and private messages on a website similar to Facebook. In order to gather information we had the students respond to surveys before and after the experience so that we could measure their attitudes toward technology, homework, and the ESL Silver program. Although the survey instrument was initially created as a means of evaluating the program itself, this study focuses on the student participants and the individual characteristics that influenced their attitudes toward the program in one way or another.

Data were collected over the period of one year using design-based research theory for CALL program implementation. As such, ESL Silver was implemented four distinct times in the English Language Center at Brigham Young University (BYU). Each successive iteration would inform changes made to both the program itself and how it was implemented the following semester. We also created a similar program for students studying Japanese, called JFL Silver, and it was implemented in much the same way as its English counterpart. Through the multiple iterations, I gleaned information about the student populations involved in the study and was able

to analyze their attitudes toward technology as well as how various characteristics affected student attitudes toward the online language-learning experience.

Assumptions and Limitations of the Study

The generalizability of this study is limited by the student population with which it was conducted, the observations we chose to focus on, and the number of iterations we implemented. The participants were all students studying in Provo, Utah, and the majority of them were between the ages of eighteen and twenty-nine. The students were all studying either English as a second language or Japanese as a foreign language, and so the results cannot necessarily be applied across all languages, although they may serve as models for students of other languages.

Assumptions. There are many assumptions made when performing this type of research. Because the nature of this study required that we rely on students to report their attitudes and usage of technology, we also depended on them to answer openly and honestly without bias and without regard to how they thought they should respond. We also had to rely on their memories as they reported on their general technology use.

Another major assumption of this study was that teachers would implement the material and program as they were instructed. After the first in-class instruction period, we relied solely on the teachers to interact with the students and the software. We conducted interviews at the end of each iteration to assess teacher reactions, but they had complete autonomy in their classrooms during the time the study was conducted just as they have during their normal teaching.

Limitations. In addition to the assumptions we made during this study, there are several limitations to the data we gathered. The first, and probably most major, limitation is that the survey instrument we used was in English, and the students from the ELC were not native

English speakers. Although we did our best to keep the language of the survey at their level, their answers may have been affected by their understanding of the questions.

Another major limitation has to do with the number of students who participated in each group. The English version of the program was created first, and so we had multiple iterations of that program resulting in a large number student participants and took the surveys. The Japanese version, however, was only implemented once, and so we have a very small sample size, which may not be sufficient to adequately compare to the other groups. Also, because the Japanese student sample size was so small, there is a chance that those students who did participate in the program and actually completed the post survey may be a unique group of self-selecting students. That is to say that the fact that these students completed the program indicates that they may be highly motivated to not only learn their target language, but to also assist in the research of tools to assist in their language-learning goals. As such, their responses to the survey may be different from a group of students who did not participate as volunteers.

Finally, as mentioned before, the researchers did not participate in the classroom experience other than to answer teacher questions and provide technical support as needed. This means that we do not have a complete view of every factor that may have affected the outcome of the study. We selected areas of the program to focus on when interviewing the teachers, and it is possible that there was something outside of that scope that remains unmentioned. These limitations simply serve as rationale for future research in this area.

Significance of the Study

My review of the literature suggests that this study uses social networking in a way not previously done. Instead of students simply communicating via blog posts or status updates, they experience a story presented on a social network. Although many studies have been done to

investigate how the Internet is being incorporated into the classroom as well as the pedagogical implications and teacher attitudes toward technology (McFarlane, Hoffman & Green, 1997), little has been done to examine student attitudes toward this type of learning. Therefore, this study seeks to understand the student perspective on technology for learning purposes. By understanding our students better, we can better target their wants and needs, and thereby become more effective teachers. Pedagogical theory is necessary in the ever evolving landscape of language curriculum, but educators must always remember the students for whom they are creating the materials in the first place. In order to make materials that will be truly effective, we must understand the student population and deliver tools that they both enjoy and deem valuable to their learning. If we ignore the student population, no matter how pedagogically sound the materials may be, they will not perform as intended either because the students will not use them properly or because students may not use them at all.

The information gathered throughout the various iterations of the project contributes to the existing body of literature in the areas of CMC and social networking for language-learning purposes. Furthermore, not only will information regarding student attitudes toward technology be useful to teachers today, it may also be useful to those in the future. Because the landscape of technology is constantly changing, it is important to take regular measurements of student reactions so that we can compare them over time. This study spans one year in which data was gathered. Perhaps a study five years in the future may be able to repeat the study and compare those students to the group in this study and observe changes over an even greater length of time.

Chapter 2: Literature Review

The Emergence of Technology in the Language Classroom

In order to understand the ways in which technologies are changing the language classroom today, it is important to understand how far technology has come and the lessons we have learned from its implementation in the past. Perhaps one of the first instances of CALL was in demonstrating the use of computers in aiding students who were learning the Arabic writing system (Abboud, 1972). Not only did computers increase efficiency in learning targeted writing skills, but Abboud reported that students found the delivery mechanism both engaging and useful rather than cold and impersonal as some had hypothesized at the time. Studies such as this were the foundation for the creation and implementation of a wide variety of technologies over the next three decades.

The eighties and nineties saw the development of the personal computer and the gradual integration of technologies associated with the PC into the language classroom and in the home. The studies during this period of time frequently pitted CALL materials against non-CALL materials with varying results. One common thread among these studies, however, was that computers can perform a wide variety of functions in the learning process (Glennan & Melmed, 1996; Kulik & Kulik, 1987; McArthur & Lewis, 1998; Ruschoff, 1988). With the accessibility to tools made possible by the Internet becoming widely available and used in the mid-nineties, the rate at which new tools began to emerge increased rapidly.

Computers today have an almost endless range of functionalities, many of which have the potential to be highly beneficial to language learners (Antenos-Conforti, 2009; Gruba & Hinkelman, 2012; Kurisak & Luke, 2009; Levy & Stockwell, 2006; Motteram, 2010). For example, the PC provides sophisticated tools for language input including those related to text,

video, and audio files, in addition to various means for eliciting student output. All of these tools together can contribute to an effective language-learning environment when used properly (Green, 2005). According to Mitchell, however, content presented through older implementations of technology such as audiotapes and videos, is quickly outdated (2009). Mitchell suggests that teachers turn to the Internet for current, authentic language input. Furthermore, the Internet is a dynamic environment that holds the largest repository of centrally located, instantly accessible information that has ever existed and it has the potential to be the single most valuable tool for language learners (Conole, 2008; Legutke, 2005; Lomicka & Lord, 2009; Mitchell, 2009).

One new way in which the Internet is being used has been in the realm of storytelling (Sabia, 2011). This seems like an obvious development when we consider that computers can be a window to an entire world through the diverse tools available for depicting life and narrative in new and interesting ways (Ang & Zaphiris, 2006; Sabia, 2011). Not only do computers demonstrate the ability to present authentic texts in innovative ways, they also allow students to share their own stories and learn from one another, all of which leads to enhanced motivation and the establishment of an identity in the target language (Nicholas, Rossiter, & Abbot, 2011). This function as a means for conveying stories is one where innovation is only beginning, but promises to offer both engaging and effective tools for learning a language.

With the rapid development of tools for language learning both on and offline, technology has become a vital part of language instruction (Conole, 2008; Stockwell, 2007; Wang, 2005). Its use has grown so much that the special distinction of CALL as a category of language-learning tool seems no longer necessary (Chapelle, 2010; Kern, 2006). Indeed, the use of technology is so engrained into language curricula that it has become normalized and even

expected (Gruba & Hinkelman, 2012; Thomas, 2011). The development of these capabilities comes with the implication that they are constantly evolving with no end in sight. We can easily observe that within the last ten or fifteen years, the power and mobility of technology has increased exponentially, making its way into users' homes, cars, classrooms, and even their pockets.

Understanding “Digital Natives”

With the prevalence of technology both in and out of the classroom, it seems inevitable that the technology will have affected the populations who use it most. Nowhere is this change more apparent than those young adults for whom technology has been an integral part of their lives since birth. This particular population is frequently referred to as “digital natives” (Prensky, 2001), although they are also known as the “iGeneration” (Mills, 2011) or the “net generation” (Thomas, 2011). The phrase “digital native” was first introduced in 1996 by Barlow (1996), although the idea for it was later made popular by Prensky (2001). The prevailing theory behind the label of digital natives is that people born after 1980 are more adept at using technology than people born before 1980. That is to say, in much the same way that children who learn a language from a young age can usually achieve a greater level of linguistic proficiency than those who start studying in adulthood, people who have been raised with technology are better at using it than those who learn later in life. This generation is defined by their innate ability to navigate the Internet, and they are highly capable when it comes to assimilating new technologies into their daily lives (Conole, 2008; McBride, 2009; Stockwell & Tanaka-Ellis, 2012). What's more, digital natives enjoy and sometimes prefer gaining information in new and innovative ways (Antenos-Conforti, 2009). Some have even gone so far as to say that students

today learn in different ways than previous generations and that they demand to use new technologies (Thomas, 2011).

The idea of digital nativeness has spread as widely as it has because it is both a logical label and an easy label to use in describing students today (Jones, 2011). Unfortunately, several issues associated with this generic label present themselves, first and foremost of which is that researchers cannot seem to agree on a time frame for this special group. They have proposed everything from the mid-seventies to the late-nineties, a period which in and of itself encompasses a whole generation (Jones, 2011). There is also the undeniable fact that there is great variability within students today when it comes to their abilities with technology (Fischer, 2012). In a follow up to his original article, Prensky clarified that the idea of digital nativeness was meant to be utilized as more of a metaphor for explaining why younger generations are more adept at using technology than their elderly counterparts (2011). He went on to explain that anyone can become equally proficient in using technology, but that recent generations tend to be more comfortable when using technology because they never went through the experience of digital culture shock. Thus it is important to note that simply because computers have existed for the duration of a person's life does not necessarily mean that that person will be any more skilled than their elders at using the technology. Similarly, being familiar with technology as a whole is not always proof that a person knows how to best utilize technology to achieve their personal goals (Dieu & Stevens, 2007; Kennedy & Judd, 2011).

It is safe to state that young adults as a group are more comfortable with technology than older generations in general, but it is important to not make assumptions when it comes to individual student experience and associations with technology (Thomas, 2011). When observing high school and college-aged students, we discover that not all students want or feel compelled

to use technology. Students can be highly selective in the various types of computer application they use, and some may even want to limit digital influences in their lives (Banaji, 2011; Bennett & Maton, 2011; Erstad, 2011; Kennedy & Judd, 2011). Although researchers do not have a concrete formula indicating why students feel the way they do about technology, they have discovered several factors which may contribute to these attitudes. Some of these factors include experience with technology, personal goals that may relate to technology, and demographics such as age, gender, and home country (Aydin, 2011; Hirata, 2006; Meunier, 1997). Because not all students value technology the same, it is important to be sensitive to the differing attitudes toward computers when implementing a digital curriculum (Brander, 2005; Gallardo Del Puerto & Gamboa, 2008). As we utilize technology for language learning, we must focus on how the students use it and on their attitudes that result from the experience they have using the technology (Blake, 2008).

A “New” Kind of Technology

Regardless of the accuracy of the label “digital native,” there is no doubt that technology is being incorporated into the language classroom at ever increasing speed. The past decade and a half has seen extremely rapid development of technologies, especially in the realm of communication. The next generation of the Web, Web 2.0, makes the Internet more interactive, allowing for exchanges that were previously impossible (Kurisak & Luke, 2009; Levy & Stockwell, 2006). Not only is the Internet a resource for complex and authentic examples of the language, Web-based applications now offer advanced tools for developing communication skills (Motteram & Thomas, 2010; Warschauer, 1997). Digital interactions are no longer limited to passive reception of information, but rather students can interact with Web content and other users in innovative and exciting ways.

Digital literacy. The idea of literacy is generally defined as the ability to communicate or receive information using a culture's most common means of expression (Wilhelm, 2010). A great deal of communication today takes place over the Internet; therefore, in today's society, people must be proficient in the use of technology as a means of communication if they are to satisfy the modern criteria for literacy (Bodomo, 2010; Erstad, 2011; Lotherington, 2005; Wilhelm, 2010). Because of the importance of digital communication, it therefore seems reasonable to use this type of literacy when learning a second language (Gruba & Hinkelman, 2012; Warschauer, 2002). One caveat, however, is that the movement to online discourse has changed the way in which people communicate (Lotherington, 2005; Stockwell, 2010). For example, a great deal of information can be conveyed through non-verbal means such as font variations (e.g. all capital letters, bold, italics, etc.) or emoticons, which are digital representations of emotions or everyday objects (Bodomo, 2010). Because of the use of mechanisms such as these, it is imperative to distinguish between the intricacies of the language and those of the communication mode, especially when learning a second language.

Computer-Mediated Communication

According to Bodomo, computer-mediated communication (CMC) is:

The coding and decoding of linguistic and other symbolic systems between sender and receiver for information processing in multiple formats through the medium of the computer and allied technologies such as PDA's, mobile phones, and blackberries; and through media like the Internet, email, chat systems, text messaging, YouTube, Skype, and many more to be invented. (2010, p. 6)

Understanding the nature of CMC, we can infer that tools such as video conferencing, instant messaging, and email, which were originally designed to connect people, can effectively connect

language students to one another and to native speakers of the language (Kinging, 2007). Before making any conclusions about CMC efficacy for language learning, it is important to understand some of the intricacies of CMC. Any CMC tool can be classified as enabling either synchronous or asynchronous communication. Synchronous tools such as video or text chat provide real-time communication regardless of distance, and asynchronous tools like blogging or microblogging allow for communication without concern for distance or time (Stockwell, 2010; Warschauer, 1997). Both categories of tools have the potential to benefit language students in different ways. The real-time nature of synchronous tools provides situations for language practice that require quick responses from a student, which exercises L2 fluency skills. In contrast, asynchronous tools allow students to plan out their communications, thereby permitting time to focus on accuracy (Levy & Stockwell, 2006; Stockwell, 2010).

Used either way, CMC can offer meaningful interaction between students while simultaneously aiding the development of fluency skills (Evans, 2009; Warschauer, 1997). Indeed, interactionist theories for language learning have been one of the greatest impetuses behind CMC research (Kern, 2006). This research has shown that technology provides valuable opportunities for cross-cultural communication and a chance to revitalize the language classroom through meaningful interaction (Kinging, 2007; Warschauer, 2002). In addition to providing opportunities for growth in language competency, CMC has also proved to be effective in the acquisition of communication skills through a mode that offers maximum benefit by being available either in the classroom or in the home (Hamilton, 2009).

Benefits above and beyond CMC. Although computers have proven to be an effective tool for facilitating learning and practicing language skills, other benefits of using technology are proving themselves to be superior to what is possible with “more traditional methods” of

language practice. One example of CMC use is that computers can keep a record of any and all communication that is taking place (Blake, 2006). It would obviously be impossible to have a native speaker monitor every conversation a student has in the target language. In fact, no person has the time or mental capacity to handle all that would be involved in that function. If that conversation takes place in digital form, however, then the computer can automatically act as both monitor and moderator. This not only makes observation easier, but it can assist in both the grading process and in gathering data about the students' current linguistic knowledge and abilities (Blake, 2006).

In addition to the added benefit of tracking student use of the language, computers also benefit students by providing an environment conducive to lowering anxiety towards using the language. Very frequently, a fear of making a mistake in front of others or simply a low-tolerance for ambiguity can prevent a student from speaking the target language as much as is necessary for adequate language practice. For students such as these, CMC via the Internet can provide a less intimidating forum for conversation simply because a face-to-face experience is not always involved. In such a setting speakers can take the necessary time to plan communications (Kurisak & Luke, 2009), which is not possible when communication takes place in person. That fact alone can remove a great deal of the anxiety that many language learners might experience in the typical classroom.

Social Networking

One specific type of CMC is made possible by a social networking site (SNS). Examples of SNSs include sites such as Facebook, Twitter, MySpace, LinkedIn, etc., through which people are able to connect and communicate in a public or semi-public forum. Social networking brings together the optimal combination of technologies for several different types of discourse, and

thus it becomes a highly effective tool for language practice. For example, by offering both synchronous and asynchronous tools for communication, social networking activities for language learning can elicit different skills, depending on the platform and purpose for communication. This also means that the various skills can be targeted at different levels (Stockwell, 2010). In addition to providing the opportunities to exercise a variety of skills, SNSs can also provide extensive, authentic material for students to study (Stockwell & Tanaka-Ellis, 2012). All of these tools combine to foster socialization in the language, and they engage learners in language practice that is both motivating and linguistically appropriate (Mills, 2011).

The theory behind SNSs for language learning. Although there is great variability among students in their use of technology, social networking is one particular technology that has entered the mainstream for students in a way that is almost universal (Kennedy & Judd, 2011; McBride, 2009). In fact, the management of social relationships through a SNS is one of the main forms of digital literacy today (Lewis & Fabos, 2005). This high usage of SNSs leads teachers to believe that SNSs have great potential to be an engaging language-learning tool. One especially appealing facet of SNSs is that social technology is always available with an Internet connection, rather than being limited to the classroom, which has the potential to greatly enhance the language-learning environment and aids in building a strong classroom community (Antenos-Conforti, 2009). SNSs also offer a great opportunity for language learners to interact with other learners or even native speakers in authentic contexts, filling a gap that can be difficult to satisfy, especially for lower-level learners (Kurata, 2010; Lotherington, 2005; Nicholas, Rossiter, & Abbot, 2011). Yet, despite its availability for the past decade and a half and its many potential benefits, social networking for learning purposes has only recently made its way into the language classroom (Kurisak & Luke, 2009; McBride, 2009).

Social networking in practice. In the studies that have been done in the area of social networking, researchers have found that SNSs are attractive to students because they are an effective means of self-expression where interactions are relevant and the platform is motivating to the students (Antenos-Conforti, 2009; McBride, 2009; Mills, 2011). This motivation influences students to increase their use of SNSs and develop close relationships with the other students, and the sense of community that is developed thereby increases student interaction in the target language (Mills, 2011; Thomas, 2011; Vesisenaho, Valtonen, Kukkonen, Havu-Nuutinen, Kartikainen, & Karkkainen, 2010). Students generally appreciate the out-of-class interaction provided by a social network because that interaction provides students with the opportunity to get to know one another in a less formal environment, which can be highly personal and can produce a high level of interactivity (Antenos-Conforti, 2009; Kurisak & Luke, 2009; Stockwell & Tanaka-Ellis, 2012).

In parallel to SNSs overall benefits to students, the distinct forms of communication contained within a SNS each offer distinct linguistic advantages when used correctly. For example, one advantage of using blogs is that they can provide extensive and authentic material that would not be possible with shorter forms of communication such a microblogging or chatting (Stockwell & Tanaka-Ellis, 2012). Blogging also provides students with a lengthy forum for expressing themselves in the target language. On the other hand, when this type of lengthy production is not a pedagogical necessity or goal, shorter forms of communication provide engaging discourse opportunities to students without the stress of having to read or produce large samples of the language (Lewis & Fabos, 2005). Regardless of type of technology, however, researchers are clear in pointing out that here is a need for some kind of guidance when using a SNS for language-learning purposes (Mills, 2011). If not closely monitored, SNS interactions

frequently lead to code-mixing (the use of more than one language in a sentence or phrase), and other inaccurate uses of the target language (Bodomo, 2010). This introduces the problem of students being exposed to improper language samples, which might reinforce bad habits (Antenos-Conforti, 2009; Stevenson & Liu, 2010). Thus, when viewed in context, social networking is still a valuable tool for language learning, but we must be careful to keep student interactions via a SNS structured and to monitor them frequently when linguistic accuracy is the goal.

Best Practices

With the plethora of exciting benefits of technology, it can seem odd that someone might be opposed to taking advantage of the value that computers can add to the language-learning process. It is important, therefore, to make the distinction between the potential efficacy of these tools and the reality of how they are actually utilized (Warschauer, 1997). Because of its relative novelty, there is a great deal more research yet to be done on Web 2.0 technologies for language learning (Levy & Stockwell, 2006). Technology offers tools that seem to fill many of the gaps facing language students today, but the truth is that these are only tools. Just because a hammer exists does not automatically mean that a house will get built, nor that the house will be beautiful or even provide the necessary shelter. Likewise, the efficacy of a technology-based program depends on how the available tools are used. As a basic rule, it should be the context of the learning environment that guides implementation (Blake, 2008; Stockwell & Tanaka-Ellis, 2012; Wilhelm, 2010). It will be the creativity and ingenuity of how the technology is integrated in a classroom that will truly prove that the technology can be useful in helping students succeed in their language-learning goals (Wang, 2005).

Pedagogical foundation. When integrating new tools in the classroom, it is important to move beyond the tool's attributes to the pedagogical implications it has for language learning (Chapelle, 2010; Gruba & Hinkelman, 2012; Hamilton, 2009). In addition to basing its use on sound language acquisition theory, it is important to ensure its implementation in a well thought out curriculum in order to achieve true efficacy (Wang, 2006). Even this, however, seems to be insufficient; thus, to ensure that technology is performing the function laid out in the curriculum, there need to be measurable outcomes associated with its use (Burston, 2003). Moreover, to guarantee that language acquisition theory remains in line with new technological developments, it is imperative that we not only adapt the technology to existing language pedagogy, but we must also be willing to re-examine language pedagogy in a world that is constantly changing (Evans, 2009; Stockwell, 2010; Warschauer, 2002). That is not to say that every new tool available will completely change language instruction, but as the world evolves, so will the needs and desires of the student population, and educators will need to adapt or risk losing their students to other interests.

Linguistic tasks. One important part of being “pedagogically sound” with respect to technological integration of a curriculum relates to the types of tasks that students will perform using the computer. These tasks should be crafted in a way that will maximize the balance between anxiety and boredom where accomplishing the linguistic goal will still be a challenge to the students, but it will not be so difficult as to hinder motivation (Egbert & Petrie, 2005). In order to achieve this, the task itself requires a solid structure where there the students understand what will be expected of them (Chenoweth, Jones, & Tucker, 2006). Because technology can be used in a large variety of ways, a lack of guidance will lead to confusion and ultimately to the failure of the technology's use. As part of a structured assignment, learners need regular and

explicit feedback on their work (Love, 2005). This will serve the dual functions of helping them progress in the target language and affirm that the student did, in fact, use the application properly. Finally, tasks need to be authentic, purposeful, and useful, and the students must understand that purpose for the technology to be used effectively (Gruba & Hinkelman, 2012).

Types of technology. Not only should tasks be clear and purposeful, but to maximize efficacy of the technology, teachers need to be using the right kinds of technology for the right purposes. It should come as no surprise that different types of technology will be more effective in different areas of language acquisition (Markee, 2005; Stockwell, 2007). For example, the use of Mp3 files in a language setting would be very useful in practicing listening skills, but probably not as effective in practicing reading or writing skills. Likewise, blogging tasks require the use of writing, lexical, and semantic skills, but blogging would be a poor substitute for speaking practice. Kern (2006) posits that different types of technology may have varying effects on learning outcomes, though he states that we do not yet know what these differences entail. One thing we do know is that it is important for the implementation of technology to be both engaging and effective, and in order to achieve this, we need to focus on what technology is being used for what purpose (Kern, 2006; Quinn, 2005).

Another aspect of using the right tools for the right job is to know when to not use technology and to use technology in a way that adds to the language-learning experience in some way. The purpose of the technology is not to provide mere classroom efficiency, but it must also be effective in its implementation (Wang, 2006). Computers shouldn't just replace books and other traditional information delivery methods; they need to add something above and beyond what books alone can do (Ang & Zaphiris, 2006; Gallardo Del Puerto & Gamboa, 2008; Kurisak & Luke, 2009; Stockwell, 2007). Especially in areas where there is resistance to the use of

technology, educators and administrators must be sure that the technology is truly adding to the language-learning experience, otherwise its use may end up hindering the language-learning process (Chenoweth, Jones, & Tucker, 2006; Gruba & Hinkelman, 2012).

The effect of the teacher on technology implementation. Although it is imperative that the use of technology be founded in pedagogical principles, arguably the most important factor affecting implementation of a technology-based linguistic activity is the teacher who uses it (Bancheri, 2006; Gruba & Hinkelman, 2012; Hirata, 2006). No matter how well thought out a computer application may be, if the teacher or student does not use it correctly, it is likely to fail. Furthermore, the way a teacher feels about technology, whether consciously or not, is sure to affect their implementation of the curriculum, and those attitudes frequently filter down to their students (Gruba & Hinkelman, 2012; Hirata, 2006; McFarlane, Hoffman, & Green, 1997).

Because teachers are such an important factor in the success or failure of a language curriculum, it is vital that teachers receive proper training in how to implement any new language-learning tools, especially when they involve the use of technology (Bancheri, 2006; Chenoweth, Jones, & Tucker, 2006). This training must include both adequate technical and pedagogical support, as lack of training will lead to improper use of tools, which causes the curriculum to be ineffective (Gruba & Hinkelman, 2012, Hirata, 2006; Love, 2005). Only by understanding the program will teachers have the chance to be motivated by what the technology can add to the language-learning process (Bancheri, 2006; Stockwell, 2007). If teachers feel that the technology has been thrust upon them without their consent and without feeling a part of the development process, the implementation of the technology is very likely to fail (Davison, 2005; Warschauer, 2002). Therefore, we need to approach training in a positive way that provides

teachers the time, resources, and support they will need to feel comfortable with the changes made to their regular teaching practices (Davison, 2005; Hirata, 2006).

Avoiding common failures of technology implementation. In addition to the important principles guiding the development of new technologies for language-learning purposes, there are several variables that affect how these technologies are integrated into the classroom (Burston, 2003). In order to make the most effective use of technology, it is important to fully understand the technology itself, its various functions, uses, and limitations, as well as why certain technologies succeed while others fail (Luke & Britten, 2007; Markee, 2005). One of the biggest downfalls of a new type of technology in the classroom is an over-enthusiasm for the technology simply for the sake of novelty. Institutions must take care that they do not jump at the next “new thing” because of a feeling of obligation to not fall behind the technological bandwagon (Stockwell, 2007). Although technology is a large part of everyday life as well an often expected aspect of language teaching, there is still sometimes a glorification of technology where there is more emphasis on the types of technology used rather than on their pedagogical implications for language learning (Kern, 2006).

It is important to not succumb to every technological fad, but it is just as important to adapt when there is a technology-based tool worth using. Because technology changes quickly, teachers and institution alike have a difficult keeping abreast of new developments (Blake, 2008). Even with a plethora of new and potentially useful technologies for communication, integration of the new capabilities into the language classroom has been fairly slow, partly because of the outdated notion that computers are for use in repetitive and simple actions only (Gallardo Del Puerto & Gamboa, 2008; Vesisenaho, et. al., 2010). “If institutions are to aspire to and invest in the dream of normalizing technology, there needs to be a broader understanding about issues

surrounding the effective appropriation of technology in [language] teaching” (Hamilton, 2009, p. 149). It is therefore necessary to continue research in the areas of computer use for language-learning purposes so that teachers and institutions will have knowledge to make informed decisions about which tools to adopt and which to pass up.

Finally, in order for technology to be used most effectively, all parties involved in the new curriculum must be fully invested in the integration of the technology. That is to say that administrators, or another group if the administration is not in a position to do so, need to provide adequate training and support for the program, teachers need to feel comfortable and understand the technology, and students need to feel like the technology is offering them something that they cannot get elsewhere (Kurisak & Luke, 2009; Stevenson & Liu, 2010). Students especially need to feel that the technology is already a normalized part of the classroom because their expectations of and attitudes toward a curriculum will affect how they interact with it (Blake, 2008; Burston, 2003). Because there can be ups and downs in motivation throughout the implementation of something new, it is beneficial to monitor student use of a program over time in order to gain a greater understanding of the curriculum as a whole and the efficacy of the tools students are using (Kurisak & Luke, 2009). As technology-based curricula are integrated into the classroom, there needs to be a high level of creativity and adaptivity in place to accommodate the many people involved and to ensure proper evaluation of technological tools (Kessler, 2007).

Conclusion

Due to its ability to offer highly personalized language instruction and materials, technology has become an integral part of today’s language-learning environment (Conole, 2008). Kurisak and Luke (2009) summarize very well the ideas presented here:

As a powerful tool, technology has the potential to lead to the development of dynamic learning environments, support cross-cultural communication, foster critical thinking, and engage and motivate learners, but in and of itself, however, it does not guarantee successful learning. Like all tools, the utility of technology ultimately depends on how, when, and why it is implemented—on both how it is presented to learners and how they respond to it. (2009, p. 173)

Despite the caveats regarding the use of technology presented above, the good application of technology can address and perhaps even solve some of today's issues in language instruction (Chenoweth, Jones, & Tucker, 2006). As one key example, CMC has the potential to fill the deficit in communication opportunities of students not able to study abroad. Even though students today have shown that they can adapt quickly to almost any technology, we should still do our best as educators to include students in the curriculum development process (Banaji, 2011). It is vital that we observe how our students use software for language learning and that we adapt its implementation accordingly, for progress will be elusive if we proceed without regard to our students (Fischer, 2012; Hamilton, 2009; Hirata, 2006; Kessler, 2007). With this in mind, I have structured this study in such a way that seeks to fill some of the existing gap in understanding student attitudes toward in a language-learning context using technology while simultaneously maximizing on the lessons learned from previous research.

Chapter 3: Methodology

Introduction to the Study

The program around which this study centered is called ESL Silver and was developed by a group of graduate students under the direction of a professor at Brigham Young University. In summary, it consists of a narrative that follows the lives of several fictional characters over the course of three weeks. What makes it unique is that the story is conveyed through a SNS using blog posts, status updates, photo postings, and private messages. Students create accounts on a closed-community SNS similar to Facebook called ELGG², and they become “friends” with the fictional characters. The characters seemingly share aspects of their lives in various ways through the site, and students read the characters’ status updates and blog posts as well as receive personal messages from the characters. Although most of the posts are automated, it is possible for a native speaker of English to write an improvised post to one or more of the students posing as one of the characters. The end result involves bringing elements of a story into the real world and making it a part of the lives of the students.

The development of ESL Silver took place in increments over the course of a year with the program being implemented multiple times at the English Language Center (ELC), which is an English school supported and owned by BYU. To date, ESL Silver has been run four times, and due to its success, we created a Japanese version called JFL Silver, which has been run once. Although I was aware of its development, I did not become part of the development team for ESL Silver until after the pilot study had concluded. Once I became involved, however, I took the lead for story construction and program implementation, working with administrators at the ELC and training teachers on how to use ESL Silver in their classrooms. I was also the lead developer for work on JFL Silver.

² For more information, go to <http://elgg.org>.

As stated previously, ESL Silver has been implemented four times at the ELC and JFL Silver was implemented once at BYU. Although students within each class at the ELC all had about the same level of English proficiency, they were from a wide range of countries and so had different native languages. This study included both males and females mostly ranging from 17 to 30 years old, but with a few outliers up to 50 years old. The students involved in JFL Silver were similar in age to the students of ESL Silver, with the slightly narrower age range of 18 to 29 years old. Unlike the students at the ELC, however, these students were all native English speakers from America.

ESL Silver

Development. ESL Silver was conceived during Winter Semester of 2010 at BYU in a graduate course in materials development as a means of integrating the ideas of story, game, language pedagogy and technology into one curriculum. Using the assumptions about students and technology outlined earlier, the developers used the ADDIE³ Model for guiding the work of instructional designers and developers. Because the students in the materials development course all spoke English, they decided to create a curriculum for ESL that could be run at the ELC. According to their website, the mission statement of the ELC is to aid the teaching, learning, and research of ESL by:

1. Providing BYU students with opportunities to apply university study in practical contexts and to develop excellence in English language teaching, tutoring, curriculum design, materials development, technology use, assessment, evaluation, and research.
2. Providing ELC students with the highest quality teaching of foundational and academic English in a research-based curriculum.

³ ADDIE stands for Analysis, Design, Development, Implementation, and Evaluation. It is a commonly used model that adds structure to curriculum development projects.

3. Sharing our scholarship by presenting and publishing our relevant experience, research, and resources for the benefit of others.

This mission statement illustrates very well why the ELC seemed to be the ideal place to test ESL Silver. Classes at the ELC are separated into six different proficiency levels. Foundations A, B, and C focus on the basics of English grammar, conversation, and written language, whereas Academic A, B, and C are aimed at preparing students for a university environment.

In conjunction with administrators at the ELC, the creators determined that they would develop ESL Silver specifically for the Foundations C students. With an idea of an overall storyline in mind, the team took existing syllabi for the selected group of students and constructed a scope and sequence, which would ensure that the material written for ESL Silver would align with the existing curriculum. The use of classroom syllabi also aided in the creation of pedagogically sound materials because they were based on an already tested curriculum. The completed scope and sequence included topics across the various classes our targeted students take at the ELC including reading, writing, fluency, grammar, and vocabulary. The writers then expanded on their imagined storyline by writing specific posts for portions of the program.

While some developers worked on the content itself, another member of the development team focused on the technological side of the program. Although they had discussed using Facebook as the delivery mechanism for the ESL Silver material, the developers ultimately decided against it because of worries over the logistics required for implementing the concept being designed and developed. In lieu of using Facebook, the team set up a site using a program called ELGG, which is an open-source tool for creating closed social networking sites. In conjunction with the site development, the programmer on the project created two other tools that were integrated with the ELGG site to assist in the implementation of ESL Silver. One tool

was an automatic poster that would add material to the site according to a schedule, thus eliminating the need for someone to log in and post the material manually every day. The other tool was created to assist teachers in correcting student posts and enabled them to log in to the website and see all posts made by the students. The teacher could then correct any grammatical or spelling errors in the post. The students would receive an email including their original post and the version created by the teacher with corrections so they could see exactly where they needed to improve. The corrected post would then be posted automatically so it would be the one to appear online. This tool was designed to serve two main purposes: assist the teachers in their grading, and ensure that students would only be exposed to accurate samples of the target language. Unfortunately, due to lack of time on the teachers' part, this correction tool was never used. This resulted in the potential for students to be exposed to inaccurate samples of English. Because we had neither the means nor the desire to strictly enforce use of the correction tool, we accepted that for these particular iterations of ESL Silver, there would be incorrect English on the website.

Story. Although the specific story details changed slightly from one iteration to the next, there were certain aspects of the story that remained constant across all iterations. The general setting for the ESL Silver story is Park City, Utah, a ski resort and former mining town, hence the name. The characters are all young adults, some of whom are students and other who have already graduated and are working. All of the characters are Americans except for one who is from Japan. The characters are all friends and roommates living in neighboring apartments, and they deal with many issues common to college-aged students including academic life, the ups and downs of employment, living with roommates, making decisions, living in a new area, and dealing with misunderstandings. In order to ensure a high level of authenticity for the content, a

large number of the stories and incidents included in the postings were taken from the lives of the developers and their friends.

Because part of learning a language is learning the culture of that language, the team developed the system based on the assumption that it would be very appropriate to have the main storylines center around topics that are relevant to Americans of the general age of the target audience. The team also thought it was important to include a wide variety in the personalities of the characters so there would be a higher likelihood of students being able to find someone to whom they could relate well. Finally, partially in an effort to avoid alienating the students who would take part in the ESL Silver experience, they thought it appropriate to include a character who was not American. He was to serve as a window to understanding some of the more obscure aspects of American culture in general and Utah culture in particular. As such, he was given an interesting backstory that was designed to explain his presence as well as his reactions during the unfolding of the story, but he did not have his own storyline that unfolded during the simulation. Nevertheless, he did take an active part in the storylines of the other characters.

The first iteration of ESL Silver involved nine characters and centered around a love story between two characters who had just met and were getting to know each other. Much of this story was related through private messages from a character named Adam who would express insecurities to the students and frequently ask for advice as to how to proceed with his budding relationship. The other main storyline followed a young woman named Violet who had found some old pictures in the attic of her recently deceased grandfather. The pictures were of a woman that she did not know but clearly showed that she was well known to her grandfather. Because no one else in her family had been able to identify the woman, she traveled to Utah in

search of someone who would recognize the woman and might be able to explain the relationship between the woman and her grandfather.

Because of feedback from students in Iteration 2, in later implementations of ESL Silver, the team decided to drop the romantic elements of the story, drop several characters, and fill out the stories of the remaining characters. The final instantiation of the story includes Corbin, a chef in Park City, who experiments in the kitchen and is consistently trodden down by his boss until one day when the owner of the restaurant accidentally eats one of his culinary experiments. Next, there is Everett who is a bit of a slacker when it comes to school and is always off on some adventure or another, of which one particular adventure results in Everett almost dying and being saved in the end by Daisuke, the Japanese character. Finally, Claire is the geek of the group and is getting ready to graduate but has been so consumed with school for the past several years that she has no plans for her life after graduation. Realizing that she has almost no money and no real direction, she begins to reevaluate what she wants to do with the rest of her life.

Implementation. Before beginning the program, students took a survey designed to measure their general use of technology, attitudes toward technology, attitudes towards homework, and experiences with language learning. After participating in the social networking experience, the students took a post-survey that was identical to the pre-survey except for the addition of questions relating to their experience with ESL Silver. I also conducted one-on-one interviews with each teacher after the completion of the program so that I might gain a broader sense of how the program was implemented and the ways in which students participated. For a list of the questions contained in the interview protocol, please see Appendix A. Finally, for a comprehensive list of implementation variables by iteration, please refer to Table 1. It should be noted that all teachers who participated in the ESL Silver experience are female.

Table 1:

Implementation Variables of ESL Silver and Student Demographic Information by Iteration

	Iteration							
	1		2		3	4		5
Class	English		English		English	English		Japanese
Language	English		English		English	English		Japanese
Level	Foundations B	Foundations C	Foundations C	Foundations C	Foundations C	Foundations C	Foundations C	202
Type	Reading	Reading	Reading	Reading	Reading	Reading	Writing	All Skills
# of sections	1	2	1	1	1	2	1	2
Teacher	A	B	C	D	B	E	F	N/A
Participants								
# of respondents	14		35		31	45		12
Average age	22.79		24.5		25.83	24.12		21.82
# of male	10		22		15	19		3
# of female	4		13		16	26		9
Implementation								
Semester	Fall 2010		Winter 2011		Summer 2011	Fall 2011		Fall 2011
Length of run	1 week		4 weeks		3 weeks	3 weeks		1 week
Concurrent with other material	Yes		No		Yes	Yes		Yes
# of weekly in-class lab visits	3	1	0-3	0-2	3	2	1	0
Story								
# of characters	9		8		5	5		4
Main storylines	Romance, Mystery		Romance, Mystery		Mystery, Adventure	Mystery, Adventure		Discovery, Slice of Life
Completed	No		Yes		Yes	Yes		No

Iteration 1. The pilot study of ESL Silver was implemented in three classes including one section of Foundations B Reading and two sections of Foundations C Reading in Fall Semester 2010. There were 16 students in the Foundations B Reading class and approximately 28 students in the two sections of the Foundations C Reading classes. In the Foundations B class, students spent two to three days a week in the computer lab working on ESL Silver. Initially, students were scheduled to work on ESL Silver once a week in class, but because the content was too difficult for this level, additional days in the lab were added. Foundation C students, on the other hand, spent one day a week working on ESL Silver in class, but not in the computer lab. For this one day each week, both levels spent 30 minutes in class working on assignments and activities.

This was a pilot study, and only a portion of the story was completed, but the ELC wished to do a limited implementation to see if it was a project they would like to pursue further. At this point there were nine characters, and the students were to focus on two main stories: Adam's romance, and Violet's mystery. The classes ran ESL Silver concurrently with their regular homework, which consisted of reading novels and completing the accompanying assignments. Also, the correction tool had not yet been programmed, and so the teachers were unable to use it to edit student posts.

Iteration 2. Between the first and second implementations of ESL Silver, I revised and completed the story, which resulted in the four weeks of material that had originally been planned. I cut one extraneous character and filled out the stories of the remaining eight characters. With the help of the teachers from the pilot study, we decided that the content was too advanced for the Foundations B students, so the second implementation of ESL Silver was only run in two Foundations C reading classes. There were two new teachers, so before the run, I met with each teacher to instruct them on how to use the ELGG website, the error correction tool, as well as

briefing them on the reasoning behind the concept of ESL Silver as a teaching tool. The teachers were given copies of all site postings three weeks before the program began so that they would have time to prepare lesson plans and familiarize themselves with the plot-lines before the program began. I also sent them lists of possible homework assignments, in-class activities, and quizzes that the teachers could use throughout the month.

Instead of running ESL Silver concurrently with reading another novel as the pilot classes had done, during this iteration ESL Silver replaced a novel altogether. Classes met in the lab three times early in the program and then were required to do the rest of their studying at home. The teachers administered occasional comprehension quizzes, but students were evaluated only on whether they had done the reading or not, rather than on their quiz score. There was sometimes a brief discussion of the answers to quiz questions, but other than that, the teachers did not work on ESL Silver in class.

Iteration 3. Based upon the students' overall response to Iteration 2 of ESL Silver, I made several changes to the material in between the second and third implementations. I cut the number of characters from eight down to five and eliminated the entire romantic storyline. I also edited all posts for proficiency appropriateness, and with these cuts, the duration of the program was reduced to three weeks.

For this implementation, ESL Silver was run in one Foundations C class taught by one of the teachers who had been involved in the program for the first run. Because of this, I gave her no special training other than to update her on the program changes and to relay information gleaned from the second run. On average, the class visited the computer lab three times a week for about fifteen minutes each to look over the content together, and then they would discuss the

story in class about twice a week. There were also other daily activities in class that were related to topics and grammar patterns that appeared in the ESL Silver content.

Iteration 4. For the fourth iteration of this program, we decided to focus more on implementation of the material rather than the material itself. Thus, I made no changes in the content after the third run. I made sure to offer in-depth training to both teachers for this semester, giving thorough instruction for how to use the material and the reasoning behind the methodology.

ESL Silver was again run with two groups of Foundations C students at the ELC, but this time, one of those classes used ESL Silver in both their reading and writing classes. The other class discussed the material only in their reading class. This was because one of the teachers for this semester taught two separate sections of the Foundations C reading course, and so she used it in both. The other teacher, however, taught only one of these sections' Foundations C writing class during that particular semester.

In the reading classes, students spent 15 minutes twice a week in the lab with additional in-class time spent discussing the material. The writing class went to the lab once a week for 10 minutes, and they were given assignments out of class to write their own blog posts relating to topics discussed in class. Both classes used the same ELGG site rather than using separate ones as had been done in previous iterations.

JFL Silver

Development. Based on the success of ESL Silver after three iterations, it was determined that we could make a pilot study in another language, and so I began working on JFL Silver. I followed the same ADDIE process that we used with ESL Silver, and having had experience with the ELC implementations, creation of the JFL Silver pilot went much quicker.

Based on that experience with ESL Silver, I chose a roughly equivalent BYU Japanese course level for which to create the new material, which was Japanese 202. It seemed especially appropriate to use JFL Silver with this group of students because they do not generally have a great deal of reading and writing material for that class, and so JFL Silver was able to fill that gap.

Because the software had already been written and tested by this point, the only development required was the actual creation of content. I took the syllabus for the Fall Semester 2011 Japanese 202 course and created a scope and sequence for one week's worth of JFL Silver material. In order to avoid some of the issues that ESL Silver students had raised in regard to story, I observed several Japanese 202 classes and talked with the students to understand why each was studying Japanese and some other topics of interest to them. I then constructed a story and wrote the content for the week I had chosen. Because I am not a native Japanese speaker, I had a native of Japan edit the posts for accuracy and voice so that the posts would truly sound authentic.

Story. The completed JFL Silver story included four characters, two who were Americans and two who were native Japanese, and all four of whom live in Kyoto, Japan. This city was chosen because it is the cultural center of Japan and thus provides a rich environment for the story and opportunities to convey interesting historical information about the country. It is also a city that students would spend time in if they were to participate in BYU's Japan study abroad program.

Like the story for ESL Silver, the characters are all young adults roughly of college age. Also like ESL Silver, many of the topics were taken either from my life or those of my friends, and they were selected as subjects the students had mentioned in my discussions with them. One

character is an American girl named Paisley who moved to Japan to teach English after graduating college. She has to deal with the struggles that come from being different in a fairly homogenous society. Paisley is also an “otaku,” or nerd, who likes anime, although that is only one of many reasons why she chose to study Japanese. Next there is Aiko who is working part-time and going to English cram school so that she will be able to improve her English enough to study in America. Takahiro is a traditional college student studying at Kyoto University and trying to decide what he would like to do after he graduates. Finally, Kent is a half-Japanese, half-American young man who was raised in California speaking very little Japanese. His grandmother passes away and leaves him a rather large sum of money, which he decides to use to travel to Japan for the first time in his life and visit the locations of stories told to him by his grandmother when he was young.

Implementation. JFL Silver was only implemented once in Fall Semester of 2011, and it was run fairly informally as a pilot. I visited the Japanese 202 classroom and gave a brief presentation on the program, which resulted in 12 students signing up to participate. Students were offered extra credit for their participation, but it was completely voluntary. Of the students who originally signed up, eight of them took the pre-survey, five actually participated, and three completed the post-survey. The pre and post surveys were, for the most part, identical to those administered to the ESL Silver students, with the substitutions of “Japanese” where the other survey said “English” and “JFL” for “ESL”. There was no discussion of the program in class after my introduction, nor were there structured assignments, although I was available to answer student questions by phone or email for the duration of the week.

One tool available to the JFL Silver participants that was not available to students using ESL Silver was a browser plug-in that would translate words from Japanese into English for

them. This was done through use of either a Firefox plug-in called “Rikai-chan” or the Chrome counterpart, “Rikai-kun,” which allows users to mouse over words written in kanji or kana and have them translated immediately. Use of this plug-in was part of the JFL Silver orientation.

Survey Instrument

For the first iteration of ESL Silver, there was not yet a pre-survey in place, and the post-survey was comprised only of demographic questions and questions about the ESL Silver experience. Thus although the pilot was an important part of developing the survey instrument, I will not be comparing students from Iteration 1 to those of the other iterations. For the full, finalized survey, please see Appendix B.

The pre and post surveys for Iteration 2 and after contained sections regarding student demographics, their use of and attitude toward technology, and their attitudes about homework. The post survey included questions asking about the ELGG experience with the different names inserted for the program depending on if the students participated in ESL Silver or JFL Silver. For the sake of brevity throughout the rest of this paper, however, I will refer to this as the ESL Silver portion of the survey. All attitude-related items were on a 6 point Likert scale with the number to value correspondences shown in Table 2. When we were revising the survey and testing its validity and reliability, we ran a version of the pre-survey with a large group of BYU students who were all studying Japanese at the time, although their class levels varied. In this way we were able to refine our instrument for measurement while simultaneously obtaining information about one of our target populations, although it may not have necessarily been representative of the Japanese 202 group in particular.

Table 2:

Likert Item Number Correspondence

Ordinal Value	Nominal Value
1	Strongly Disagree
2	Disagree
3	Slightly Disagree
4	Slightly Agree
5	Agree
6	Strongly Agree

In order to accurately measure student attitudes toward technology, we included a variety of questions all aimed at one of the following sub-topics:

1. Comfort and familiarity with technology,
2. Enjoyment of technology,
3. Value placed on technology in general, and
4. Use of technology as a learning tool.

Although we did have in mind classifications for each question when we developed the survey instrument, we ran correlations on the data we received during the test to discover scales that we felt represented the main topics of interest. Because some of the items within each scale were negatively correlated, it was necessary to recode the values before adding them to the scale average. The recoding of negatively correlated items consisted of inverting the scores so that the item would be positively correlated. Also, in order to ensure high internal validity of the scales, only questions that maintained a high Cronbach's Alpha were included. The final scales for the main areas of attitudes toward technology are shown in Table 3. It should be noted that some of the questions that indicated comfort with technology, enjoyment of technology, or value seen in technology were included in the overall attitudes toward technology.

Table 3:

Scale Items Related to Student Attitudes toward Technology

Scale	Cronbach's Alpha	Questions
Overall Attitudes Toward Technology	0.919	I am familiar with computers in general.
		I feel confident with my ability to learn about technology.
		I like using technology.
		Technology makes me feel uneasy and confused.
		Technology makes me feel stupid.
		I think using technology will be difficult for me.
		I use my knowledge of technology in many ways as a student.
		I really enjoy using computers and the Internet to learn.
		I like using technology in my schoolwork.
		I am confident using technology as a learning resource.
I am able to do as well with technology as my fellow students.		
General Comfort with Technology	0.883	I am familiar with computers in general.
		I feel confident with my ability to learn about technology.
		I am confident using technology as a learning resource.
		I am able to do as well with technology as my fellow students.
		I feel out of place when confronted with technology.
		Technology makes me feel uneasy and confused.
		Technology makes me feel stupid.
		I feel uncomfortable using most technology.
I think using technology will be difficult for me.		
Enjoyment of Technology	0.811	I like using technology.
		I really enjoy using computers and the Internet to learn.
		I like using technology in my schoolwork.
Value Seen in Technology	0.780	Knowing how to use technology is a necessary skill for me.
		It is important to know how to use technology.
		Learning about technology will help me do well in life.
		Learning about technology is a worthwhile and necessary subject for all students.

Although there were nearly as many questions relating to homework as there were relating to technology, there were far fewer items within the homework section that had any strong correlation. I was, however, able to find one strong scale, which was how much students enjoyed their homework, as shown in Table 4.

Table 4:

Scale Items Related to Student Attitudes toward Homework

Scale	Cronbach's Alpha	Questions
Attitudes toward Homework	0.795	I like doing homework. My homework is relevant to my life. I am excited about doing my homework. I think my homework is boring.

The main purpose of the post-survey was to ascertain student attitudes toward ESL Silver as well as to ascertain if any student attitudes relating to homework or technology had changed since the beginning of the experience. Students were asked a number of questions relating to several aspects of the program. The main topics of the questions referred to:

1. The program as a whole,
2. The English learned as a result of the program,
3. The story and characters, and
4. Their teacher's participation as directors of the experience.

Table 5 contains the final scales for these items. In addition to several Likert-type questions, we also asked students to respond in an open-ended format to how they would improve the program for future iterations.

Table 5:

Scale Items Related to Student Attitudes toward ESL Silver

Scale	Cronbach's Alpha	Questions
Overall Attitudes toward ESL Silver	0.962	<p>I liked the story on ESL-Silver .</p> <p>The English I learned on ESL-Silver is relevant to my life.</p> <p>I think ESL-Silver is fun.</p> <p>ESL-Silver helped me learn English.</p> <p>I still remember words and phrases I learned on ESL-Silver.</p> <p>I liked the characters in ESL-Silver.</p> <p>I want to know more about the characters in ESL-Silver.</p> <p>The characters in ESL-Silver were believable.</p> <p>I prefer ESL-Silver to my regular English homework.</p>
Attitudes toward Teacher Involvement	0.837	<p>My teacher prepared me to use ESL-Silver.</p> <p>My teacher helped me when I had questions.</p>
Attitudes toward Story	0.933	<p>I liked the story on ESL-Silver .</p> <p>I liked the characters in ESL-Silver.</p> <p>I want to know more about the characters in ESL-Silver.</p> <p>The characters in ESL-Silver were believable.</p>
Attitudes toward English Learned	0.895	<p>The English I learned on ESL-Silver is relevant to my life.</p> <p>ESL-Silver helped me learn English.</p> <p>I still remember words and phrases I learned on ESL-Silver.</p>

Creating Group Comparisons

Although the data were gathered in straightforward and distinct groups, I was also interested in comparing student attitudes toward technology and the ESL Silver program across other variables such as age and Internet usage. In order to do this, it was necessary to categorize students in some way so that a one-way ANOVA would produce meaningful and understandable results. Considerations in creating these groups included having a manageable number groups to

compare as well as having an adequate sample size within each group so that a Tukey's post-hoc test could identify significance.

In the case of age, it is fairly common to split age groups into five year increments. Because of the scattered number of participants in the 36-50 year-old age range, however, I decided to combine the groups for 36 years and older so that that particular group would have enough respondents to indicate significance. Also, even though the youngest participant was 17 years-old, there was still a sufficient sample size in the 20 and younger group that I left it as is.

Similarly to the age groupings, it was necessary to categorize students by the number of hours they spent online in an average day. This particular grouping required slightly more trial and error to produce categorizations that kept both a fairly consistent sample size and number of hours spent online per day. Having found that the average time spent online across all students was about four hours per day, I thought it necessary for that number to fall in the middle group. Based on the skewness of the bell curve for Internet usage, I finally decided on only three groups, which I believed best represented the populations of students who responded to the surveys. These final groups were 0-2 hours, 3-5 hours, and 6+ hours.

Conclusion

In summary, ESL Silver was created as a pedagogically-founded, technology-based curriculum for students of English. It was implemented four times at the ELC, and based on its success, a Japanese version called JFL Silver was created and utilized once in a Japanese 202 course at BYU. Several implementation variables were altered for each iteration, and then through the use of surveys and interview protocols, we were able to analyze several student attributes across the different iterations. The surveys created for this study in particular seek to understand student demographics, attitudes toward learning their target language, attitudes

toward and usage of technology, attitudes toward homework, and finally reactions to ESL Silver. So that we might better understand the student responses, we also created an interview protocol that illuminated the teacher's use of ESL Silver in the classroom as well as their attitudes toward the experience and their perceptions of the student reactions to the experience. An analysis of these constructs follows in Chapter 4.

Chapter 4: Results

Review of the Study

As mentioned earlier, this study sought to implement a design-based research approach to integrating an innovative curriculum into the language learning experience. With the assistance of administrators and teachers at the ELC, a team of developers created a system designated ESL Silver, in which students participated over the course of one to four weeks depending on iteration. The experience involved visiting a website similar in look to Facebook where the students would then read blog posts, status updates, personal messages, and wall posts from fictional characters and thereby experience a story. Students had the opportunity to become the creators of content themselves as they responded to the characters and wrote their own blog posts. As part of the community building aspect of the experience, students could also interact with one another via the website.

ESL Silver was implemented at the ELC in four separate iterations in successive semesters, and information gleaned from student and teacher responses to the experience led to changes to either the content or presentation of the material and system for future iterations. After several successful iterations of ESL Silver, a Japanese version called JFL Silver was created and piloted once in a Japanese 202 course at BYU. As a reminder, for the sake of brevity, I will refer to both the Japanese and English versions of the system as ESL Silver. In order to gather data, I administered both pre and post surveys to the students that would cover a variety of topics including student demographics, attitudes toward their language, technology, and homework, and reactions to ESL Silver. I also utilized an interview protocol with the teachers to gain a broader understanding of the ways in which the program was implemented and to better

understand the teachers themselves. The data gathered from both the surveys and interview protocols are as follows.

General Use of Technology

The first area of interest was to understand how the students use technology in their everyday lives, including their access to computers or smart phones, the number of hours they spend on the Internet each day, and the ways in which they spend that time online. Table 6 includes the statistics across iterations, which show that all or nearly all students have a computer in their homes, although the average for Iteration 2 is significantly lower than for the other groups. There was, however, no significant difference between the groups as far as owning a cell phone with Internet access. Also according to Table 6, the average number of hours spent online daily varied a great deal between the iterations. Using Tukey's post-hoc test for significance, Internet usage for the students in Iteration 5 proved to be significantly higher than those in Iteration 2 ($p < .01$) and Iteration 3 ($p < .05$). The Internet usage of the students in Iteration 2 was also significantly lower than those in Iteration 4 ($p < .01$).

When I surveyed the participants to determine the percentage of time they spent doing various activities online, students responded that their most common use of the Internet was for schoolwork, although this was only marginally true for Iteration 2. The next most popular activity across all groups was social networking followed by watching television shows or movies and emailing. Although there was no significant difference between iterations in regards to how they spent their time online, there was a general trend of the ELC iterations spending more time watching videos on YouTube and social networking where the BYU iterations spent more time on gaming and schoolwork.

Table 6:

General Access to and Use of Technology by Iteration

	Iteration					
	2 <i>n</i> =35	3 <i>n</i> =31	4 <i>n</i> =45	5 <i>n</i> =12	Test <i>n</i> =52	Total <i>n</i> =175
% who have access to a computer at home	*85.71%	100%	93.33%	100%	98.08%	94.86%
% who own a smart phone	37.14%	41.94%	53.33%	16.67%	44.23%	42.86%
Average daily Internet usage (hrs)	**3.15	*3.79	*4.36	**5.67	4.15	4.06
Percentage of time spent on						
Social Networking	22.43	17.16	18.27	15.83	16.35	18.17
Email	13.43	9.35	12.49	11.25	12.69	12.10
Blogs	2.71	4.84	5.27	0.83	3.97	3.99
YouTube	6.76	8.73	9.47	5.42	6.63	7.68
TV shows/movies	13.97	15.74	13.82	14.58	10.15	13.15
News	11.66	9.81	0.00	5.62	3.53	10.47
School work	23.29	26.97	31.56	38.75	33.27	27.89
Games	2.14	3.77	1.89	6.67	4.75	3.46
Other	4.20	3.90	7.29	6.67	8.65	6.42

* $p < .05$ ** $p < .01$ **Student Attitudes toward Technology**

Using the scales described in Chapter 3, I used an ANOVA to evaluate changes between iterations and discover average attitudes toward technology across the various implementations. Table 7 shows these average scores on each scale. Tukey's test of significance revealed that there were, in fact, several differences between the students from iteration to iteration. The biggest difference in technology attitudes was in comfort using technology. Both the students from Iteration 5 and the test group had significantly higher scores than students in Iterations 1 and 2 (p

< .01). Overall attitudes toward technology had a similar outcome with students of Iterations 2 and 3 having significantly lower numbers than the students in Iteration 5 ($p < .05$) and the test group ($p < .01$). Despite these large differences, there was no statistically significant difference between the iterations in regard to how much the students enjoyed technology, nor the value they saw in technology. Nevertheless, the group in the pilot study did have a significantly higher score on technology value than students from Iteration 3 ($p < .05$).

Table 7:

Student Attitudes toward Technology Displayed by Iteration

	Iteration					
	2 <i>n</i> =35	3 <i>n</i> =31	4 <i>n</i> =45	5 <i>n</i> =12	Test <i>n</i> =52	Total <i>n</i> =175
Overall Technology Attitudes	**4.6286	**4.6129	5.0384	*5.3636	**5.1976	4.9506
Comfort in Using Technology	**4.4095	**4.3513	*4.8889	**5.3426	**5.1880	4.8178
Enjoyment of Technology	4.9143	4.9677	5.2000	5.4167	5.1603	5.1048
Value Seen in Technology	5.1071	*4.9516	5.1333	5.5208	*5.4183	5.2071

* $p < .05$

** $p < .01$

In addition to the ANOVA comparing iterations to each other, I performed independent sample *t*-tests between the pre and post tests of each iteration in order to observe any differences in attitudes toward technology before and after the ESL Silver experience. As depicted in Table 8, there was no significant difference between attitudes toward technology on the varying scales between the pre and post tests for each iteration except in the case of student responses from Iteration 4 to their comfort in using technology. Outside of that case, however, it is difficult to ascertain any trends between the pre and post tests that can be generalized across iterations.

Indeed, when averaging pre and posts test results from all iterations combined, the scores for each become virtually the same, suggesting that the ESL Silver experience did not have any significant impact on student attitudes toward technology.

Table 8:

Student Attitudes toward Technology Compared Before and After ESL Silver across Iterations

Iteration	<i>n</i>	Overall Technology Attitudes	Comfort in Using Technology	Enjoyment of Technology	Value Seen in Technology
2					
pre	16	4.5852	4.4375	4.8333	4.9877
post	19	4.6651	4.3860	4.9825	5.2105
3					
pre	16	4.7102	4.4306	5.1458	4.9877
post	15	4.5091	4.2667	4.7778	4.9167
4					
pre	17	5.0053	*4.7712	5.1961	5.0588
post	28	5.0584	*4.9603	5.2024	5.1786
5					
pre	8	5.3750	5.3750	5.3750	5.5000
post	3	5.3409	5.2778	5.5000	5.5625
Total					
pre	57	4.8565	4.6667	5.1053	5.0789
post	66	4.8375	4.6566	5.0606	5.1515

* $p < .05$

** $p < .01$

Factors Affecting Attitudes toward Technology

In order to understand the main variables affecting student attitudes toward technology, I ran multiple ANOVAs and independent sample *t*-tests. Table 9 shows the results of the analyses that produced significant differences between groups. I found that there were significant differences between males and females, among age groups, between students who used the Internet little or a great deal, and among students who attended different schools (i.e. whether

they were attending the ELC or BYU at the time of the study). In addition to the results shown in Table 9, I utilized an ANOVA to discover attitudes toward technology by country. I found that there is not a significant difference in these attitudes between countries except when it comes to some of the eastern Asian countries. The students from Japan in particular reported much lower comfort levels with and overall attitudes toward technology than students from other countries ($p < .01$). For a full list of technology attitudes by country, see Appendix C.

Table 9:

Technology Attitudes by Various Attributes

	<i>n</i>	Overall Technology Attitudes	Comfort in Using Technology	Enjoyment of Technology	Value Seen in Technology
Gender					
Male	84	5.0993	4.9956	*5.2325	5.3059
Female	91	4.8578	4.7333	*4.9961	5.0971
Age Group					
- 20	55	**5.1025	**5.1172	*5.1273	5.1818
21-25	69	*4.9842	**4.8019	*5.1449	5.2101
26-30	23	4.9130	4.7826	*5.2029	5.2935
31-35	4	5.2273	4.8333	5.3333	5.3125
36 +	7	**4.0130	**3.8254	*4.1905	4.6429
Internet use (average hours per day)					
0-2	40	*4.7091	*4.6472	**4.7833	*4.9375
3-5	85	4.9615	4.8000	5.1765	5.2735
6 +	39	5.2308	5.1140	5.3162	5.3205
School Attending					
ELC	111	**4.7903	*4.5876	5.0450	**5.0743
BYU	64	**5.2287	*5.2170	5.2083	**5.4375
Total	175	4.9506	4.8178	5.1048	5.2071

* $p < .05$ ** $p < .01$

Because there were seemingly several variables contributing to student attitudes toward technology, my next step was to discern the extent of each variable's impact on these attitudes. Therefore, I utilized linear regression to indicate which attributes best predicted how students reacted to technology. The results for both student enjoyment of technology use and value seen in technology were fairly straightforward. I found that the factor which most accurately predicted a student's enjoyment of technology was the number of hours they spend online each day, standardized $\beta = -.271$, $t(175) = 3.475$, $p < .01$. Similarly, value seen in technology also only had one major predictor, which was the school which the students attended, standardized $\beta = .302$, $t(175) = 3.903$, $p < .01$.

In contrast to the simple regression results found with enjoyment and value of technology, confidence with technology and overall attitudes toward technology were much more complex. Table 10 displays the regression results for both of these categories. In the case of predicting overall attitude toward technology, the single most significant variable was age, although when other variables were factored in, age became secondary to number of hours spent online daily. In regard to predicting comfort in using technology, the single most significant variable was which school the students attended, although that became second to age when other variables were factored in. The variables which best indicate both overall attitudes toward technology and comfort in using technology proved to be age, number of hours spent on the Internet daily, gender, and school attending. Although the variables were the same for both scales, the significance of the variables were different.

Table 10:

Regression of Variables Predicting Attitudes toward Technology

	Overall Attitudes toward Technology			Comfort in Using Technology		
	β	t	Sig.	β	t	Sig.
Single Variable						
Age	-.263	-3.358	.001			
School Attending				.335	4.384	.000
Multiple Variables						
Age	-.195	-2.486	.014	-.249	-3.276	.001
Number of hours spent on the Internet daily	.216	2.871	.005	.166	2.274	.024
Gender	-.182	-2.446	.016	-.198	-2.747	.007
School Attending	.173	2.196	.030	.238	3.127	.002

Homework Preferences

The next research question in this study related to whether students preferred their regular homework, whether or not it contained an element of technology, or homework involving online collaboration through a SNS, specifically the ESL Silver program. For the purpose of this research, I thought it important to first ask about student attitudes toward homework in general. As shown in Table 11, students generally feel rather neutral about homework, slightly leaning toward liking it, except in the case of students from Iteration 5. Students do, however, seem to enjoy the materials and books they use for language learning, again with the exception of the Iteration 5 students. Finally, when asked whether they preferred the ESL Silver program over their regular homework, other than a negative reaction from the students in Iteration 2, the general consensus was that students did slightly prefer the technology-based program.

Table 11:

Attitudes toward Homework by Iteration

	Iteration				Test	Total
	2	3	4	5		
	<i>n</i> =35	<i>n</i> =31	<i>n</i> =45	<i>n</i> =12	<i>n</i> =52	<i>n</i> =175
Overall enjoyment of homework	3.7214	3.8952	3.9634	3.5000	3.8125	3.8250
I like the materials, books, and handouts we use	4.2286	4.2258	**5.0444	**3.8333	5.4231	4.7657
I prefer ESL Silver to my regular homework	**2.2632	*3.6000	**4.0357	3.6667	N/A	3.4000

* $p < .05$ ** $p < .01$ **Technology Attitudes and their Effect on Attitudes toward ESL Silver**

Understanding the student population and how they reacted to various aspects of technology use, I then categorized students into groups based on their overall comfort with technology to see if those attitudes had any effect on their attitudes toward the ESL Silver experience. Examining the ANOVA, however, there was no significant difference found between student attitudes toward ESL Silver when categorized by overall comfort in using technology. I then performed the same categorization for value seen in technology, enjoyment of technology, and confidence in using technology. ANOVAs that took into account each of these categories as the factor produced the same result, which was that there was no significant difference between student attitudes toward ESL Silver on any level based upon their attitudes toward technology. A correlation matrix revealed that there was some correlation between attitudes toward technology and attitudes toward ESL Silver. As shown in Table 12, attitudes toward technology are generally positively correlated with attitudes toward ESL Silver, except in the case of teacher

involvement in the program, which proved to be negatively correlated, although only Internet usage showed significance at $p < .05$.

Table 12:

Correlation between Attitudes toward Technology and Attitudes toward ESL Silver

	Overall Attitudes toward ESL Silver	Attitudes toward Language Learned	Attitudes toward Story	Attitudes toward Teacher Involvement
Overall Technology Attitudes	*0.255	.207	*0.254	-.093
Confidence in Using Technology	.219	.150	.231	-.047
Enjoyment of Technology	*.265	.240	*.267	-.106
Value Seen in Technology	.034	.001	.057	-.177
How many hours on average do you spend per day on the Internet?	.172	*.243	.130	*-.308

** Correlation is significant at the $p < 0.01$ level (2-tailed).

* Correlation is significant at the $p < 0.05$ level (2-tailed).

Variables Affecting Attitudes toward ESL Silver

Once I found that neither attitudes toward nor use of technology had any significant impact on students' reaction to ESL Silver, I sought to understand what other variables may have affected how students felt about the experience. Because the greatest overall difference between the students was the iteration during which they participated in the experience, the first ANOVA I created compared student attitudes across implementations. As seen in Table 13, responses to ESL Silver were generally positive, except for the students of Iteration 2, who had a significantly different and negative reaction to the program. The only other significant difference was in student reaction to teacher involvement in Iteration 5, which was significantly lower than in the other groups.

Table 13:

Attitudes toward ESL Silver by Iteration

	Iteration				Total <i>n</i> =65
	2 <i>n</i> =19	3 <i>n</i> =15	4 <i>n</i> =28	5 <i>n</i> =3	
Overall Attitudes toward ESL Silver	**2.7076	3.9481	4.0675	4.6296	3.6684
Attitudes toward Language Learned	*2.8947	3.9111	3.9524	4.4444	3.6564
Attitudes toward Story	**2.7368	4.0167	4.1339	4.9167	3.7346
Attitudes toward Teacher Involvement	4.9474	5.4000	5.3393	**2.8333	5.1231

* $p < .05$ ** $p < .01$

In addition to understanding the differences between student attitudes across iterations, I desired to know if there were any other factors which might be contributing to students' attitudes about ESL Silver. As I did when discovering the variables contributing to technology attitudes, I used multiple ANOVAs to determine which groups reacted in significantly different ways. The results of the ANOVAs that showed significance are in Table 14. I found that attitudes toward teacher involvement were indeed affected by which school the students attended, as did the level at which students used the Internet on a daily basis. Students who spent more time online had significantly lower opinions of their teacher's role in ESL Silver than students who spent little time online. The only other factor that had any significance in how students reacted to ESL Silver was their attitude toward the materials used in class. According to Table 14, students who strongly like the materials that were generally used in class had a significantly more positively reaction to ESL Silver than students who disliked their in-class language-learning materials.

Table 14:

Attitudes toward ESL Silver by Various Attributes

	<i>n</i>	Overall Attitudes toward ESL Silver	Attitudes toward Language Learned	Attitudes toward Story	Attitudes toward Teacher Involvement
School					
ELC	62	3.6219	3.6183	3.6774	*5.2339
BYU	3	4.6296	4.4444	4.9167	*2.8333
Internet Usage (hrs. per day)					
0-2	15	3.3630	3.2000	3.4833	**5.5000
3-5	38	3.7427	3.7719	3.8026	*5.1974
6 +	11	4.0707	4.1212	4.0909	**4.5000
Feelings toward Materials Used in Class					
Dislike	9	**2.6173	**2.8518	**2.5833	5.1667
Slightly like	24	3.7083	3.7917	3.7188	4.9583
Like	25	3.6756	3.5333	3.8200	5.0600
Strongly like	7	**4.8571	**4.6667	**4.9642	5.8571
Total	65	3.6684	3.6564	3.7346	5.1231

* $p < .05$ ** $p < .01$

Finally, I used linear regression with multiple independent variables to determine which ones seemed to best predict changes in attitudes toward ESL Silver when considered as a dependent variable. The results relating to the first three aspects of ESL Silver are contained in Table 15. I found that the iteration in which students participated was, indeed, the most significant factor in their attitudes toward the ESL Silver story, the language they learned throughout the experience, and their overall attitudes toward the experience. Even when other variables were introduced, iteration remained the most prominent feature affecting the various student attitudes. The other factors which did seem to predict how students reacted to ESL Silver

were how much they liked learning their language (English or Japanese), and how much they enjoyed their homework.

Table 15:

Regression of Variables Predicting Attitudes toward ESL Silver

	Overall Attitudes toward ESL Silver			Attitudes Toward Language Learned			Attitudes Toward Story		
	β	t	Sig.	β	t	Sig.	β	t	Sig.
Single Variable									
Iteration	.427	3.240	.002	.380	2.818	.007	.448	3.438	.001
Multiple Variables									
Iteration	.417	3.454	.001	.378	3.020	.004	.437	3.685	.001
I like learning English.	.282	2.310	.026	.365	2.915	.005	.270	2.254	.029
Overall enjoyment of homework	.251	2.055	.046				.270	2.252	.029

Although attitudes toward various aspects of ESL Silver proved to be fairly consistent in the regression results, attitudes toward teacher involvement of the program did not follow the same patterns. Rather than iteration being the greatest contributing factor toward attitudes about teacher involvement, the school that the students were attending was the most significant variable, $\beta = -.636$, $t(65) = -5.651$, $p < .01$, which aligns well with the ANOVA in Table 14.

There was, however, one other factor that contributed to student attitudes toward teacher involvement as director of the experience and that was gender, $\beta = -.250$, $t(65) = -2.324$, $p < .05$. The male students seemed to have responded more positively to the teacher's role in the program than the female students.

As one final act of due diligence in my exploration of the data, I decided to implement a regression without the data from Iteration 2. My justification for doing this was that the results from that implementation were so significantly different from the other three iterations, that it

might be classified as an outlier. In doing this, the regression results for attitudes toward teacher involvement did not change, but those of the other three categories did. Without the data from Iteration 2, it appears as though overall attitudes toward technology were, in fact, a significant factor in predicting student reactions to ESL Silver. As presented in Table 16, student enjoyment of technology was the most significant factor in predicting the extent to which students liked the ESL Silver story.

Table 16:

Regression of Variables Predicting Attitudes toward ESL Silver for Iterations 3, 4, and 5

	Overall Attitudes toward ESL Silver			Attitudes Toward Language Learned			Attitudes Toward Story		
	β	t	Sig.	β	t	Sig.	β	t	Sig.
Single Variable									
I like learning English.	.438	3.120	.003	.509	3.788	.000			
Enjoyment of Technology							.415	2.924	.006
Multiple Variables									
I like learning English.	.441	3.541	.001	.512	4.114	.000	.373	2.833	.007
Overall Attitudes Toward Technology	.432	3.463	.001	.349	2.802	.008			
Enjoyment of Technology							.384	2.911	.006

Qualitative Data

Of course, not every aspect of the ESL Silver experience can be examined through the quantitative data presented above. Indeed, to truly understand the quantitative results, it is important to understand how ESL Silver was implemented during each iteration. Even though the teachers in each iteration were instructed in much the same way regarding ESL Silver and

how it was to be utilized, I did not enforce any particular implementation style. Therefore, when conducting interview protocols with the teachers after each iteration, I asked several questions relating to how they used ESL Silver.

Iteration 2. When I asked the teachers how they used ESL Silver in their classes during this semester, I found that the teachers had not used the resources that had been provided and that there had been very little discussion of ESL Silver in the classroom. After the first few days of getting used to the software, students were simply told to read everything and that they would be quizzed on it. The students were not given specific assignments, nor did the teachers mention ESL Silver in class other than to administer occasional comprehension quizzes. When the students asked why they were participating in the experience, the teachers responded that it was an experiment to see if something like this could work and that they “just had to” do it.

In an effort to understand the teachers better and why they implemented ESL Silver the way they had, I asked them about their personal attitudes toward technology and its value in their lives. Both teachers of this semester admitted openly to not being as familiar with technology as others in their peer group—that they used it when necessary, but were not the type to use it in every aspect of their lives. One teacher also mentioned being skeptical of a program like this at first. She stated “In the beginning I was pretty skeptical when it was presented in tech class. By the end I enjoyed reading it, and I *can* see how having it in real time is kind of cool.” Although her opinions appear to have changed by the end, her presentation of ESL Silver in the beginning of the experience may have already influenced her students..

When I asked about how the students seemed to react to ESL Silver, one of the teachers expressed her opinion that there had been a prevailing attitude of contempt by the students toward the ESL Silver portion of her class. She stated, “A couple students were very vocal about

not liking it. Those people were the most vocal. A lot of them must have lied” when it was time to take quizzes in class. She also expressed that students who generally did all of their readings were not keeping up with the ESL Silver material.

Iteration 3. The teacher of this iteration had participated in the pilot study the previous fall and was thus very familiar with the way in which ESL Silver was intended to be implemented. When I asked her about how she used the software, she responded saying that students had routinely been granted in-class time to spend in the lab, and there was consistent discussion of the story as well as use of blog posts to teach specific language skills (e.g. reading strategies and grammar principles). The teacher stated, “I think it’s important. I think that it’s important to know everyday language and react and interact in nonacademic settings .” In response to how her students seemed to interact with the software, she went on to express

I felt like students had a hard time grasping idea that these character were made up, but they were interacting with them. They caught on, but some students just didn’t understand purpose of it. I think students would do homework because they knew they were getting credit for it. I think they were into the story. Some students expressed it wasn’t their favorite, but others liked it and found it interesting.

Iteration 4. During the semester in which Iteration 4 was conducted, schedules and teachers worked out such that there were two different reading classes using ESL Silver, and one of those classes used the website for their writing class as well. In previous iterations where there was more than one class participating, each class would use their own version of the website. For this particular implementation, however, students indicated that they wished to use the same site across the classes, and the teachers obliged. The students who worked on the program in their writing class received regular assignments to write their own blog posts in addition to responding

other posts on the sites. Because the teachers were busy with other required material in their classes, they presented ESL Silver as a fluency activity that was to be enjoyable and not stressful. They did give out assignments and plan in-class lab time for the program, but the implementation was not as structured as previous runs. When asked about the use of the ESL Silver story in her instruction, the reading teacher mentioned

We really didn't [use it]. I was planning to do more with the character stories, but it turned into the students' thing, so I didn't end up talking much about the characters. I think we would probably have done more if the other class wasn't writing. We could talk about the other class's blog posts.

According to the teachers, students enjoyed writing back and forth to each other, which resulted in a number of posts above that which they were required to make. One teacher commented "I had them read four blogs per week and asked them to make a comment for each blog they read. They couldn't just say things like "cool." They had to write something so you could prove they read it. Some students really got into it. They read so much, and they mad *tons* of comments."

Iteration 5. As I stated in chapter 3, Iteration 5 was a pilot for JFL Silver, and as such was not run as part of the regular in-class experience as it had been with the ELC students. I personally visited the Japanese 202 classroom to instruct students on JFL Silver at the beginning of the program, and then I was available via email or the JFL Silver website throughout the week in which it was run. I observed that the students would log on and respond to character posts, sometimes even asking questions. In those cases, I responded as the characters to continue the dialogue. Students also reported that they made heavy use of Rikai-chan and Rikai-kun when they encountered words that they did not understand.

Conclusion

Through the use of both quantitative and qualitative measures, I was able to gather information about and then analyze student attitudes toward several constructs relating to technology, homework, and the ESL Silver program. The particular population with which this study was implemented does seem to be very comfortable with, enjoy, and highly value technology and the role it plays in their daily lives. Areas of significant difference in attitudes toward technology include age, Internet usage, and school. Furthermore, the most significant variable in predicting student attitudes toward technology is age, although when other variables are factored in, daily Internet usage becomes a more significant factor.

Regarding ESL Silver, I found that it was the iteration in which the system was encountered that was the most significant predictor of student attitudes toward the experience. I also discovered through the teacher interview protocols that the ways in which the teachers implemented ESL Silver in their classrooms varied widely with similarly varying responses from the students. Finally, with Iteration 2 excluded as an outlier, it appears that the greatest predictors for student reactions to ESL Silver were the extent to which they enjoyed learning their language and students' overall attitudes toward and enjoyment of technology.

Chapter 5: Discussion

Introduction

The main purpose of this study is to better understand language students in the classroom today in general and more specifically the ways in which they interact with technology. By understanding their usage of and attitudes toward technology, the hope is that we as educators will be able to provide them with learning materials better tailored to their individual needs. Although the idea of digital nativeness has been one of the driving forces behind implementing technology-based curricula, we do not yet understand what effect a student's comfort with technology has on their attitudes toward digital tools for language learning. Therefore, I undertook in this study 1) to ascertain student attitudes toward technology and the contributing factors to that comfort level, and 2) to measure the effect these attitudes toward technology have on student attitudes toward a technology-based language program.

As expected, the data I gathered regarding student attitudes toward technology did indeed confirm much of the existing research in the field of CALL. However, not only did I rediscover that students do, in fact, value and enjoy using technology, I was able to shed light on some of the specific attributes that contribute to how students regard technology and technology-based language-learning programs.

Correlation versus Causation

Before delving into a discussion of the results presented in Chapter 4, it is important to first mention the differences between correlation and causality in relation to this study. Because much of this study is exploratory and it was conducted using a design-based research framework, there were no control or experimental groups throughout the implementations of ESL Silver. As a result, there is no way to prove causality on any of the scales presented in Chapter 4. The best

that I can do in this case is to show trends, correlations, significant differences, and significant predictors for the various scales. As part of this, I recognize that there may be some student variables affecting their attitudes toward a particular scale that then may affect another scale. For example, acknowledging the negative correlation between age and attitudes toward technology, there is no way with the current data to distinguish the effect of attitudes toward technology on attitudes toward ESL Silver from the effect of age on attitudes toward ESL Silver. Although we are not able to prove causation relating to student responses to the survey, there was still a great deal of valuable data gathered throughout this study.

Student Use of Technology

In order to better understand the ways in which students react to technology, I first wish to touch briefly on how students are currently using technology. As we see in Chapter 4, nearly all of the students surveyed throughout the duration of this study have access to a computer in their place of residence. With the rise of technology use in the classroom, it is a virtual necessity to own a computer, especially one with Internet access. Among the students surveyed, they spent an average of four hours a day online, nearly thirty percent of which time was spent doing schoolwork. This finding seems to provide significant proof that technology is an integral part of both student lives and also the learning environment. The fact that not one of the students out of the 175 surveyed said that they spent less than an hour online per day adds further evidence to arguments that the Internet is simply an ordinary, and even necessary, part of life. We must not, however, forget that there is variation in student use of technology both in their time spent and their purposes for using it.

Student Attitudes toward Technology

Reviewing Table 7 in Chapter 4, it is easy to observe that not only do students like using technology; they are generally quite comfortable in using it. On a scale of six, all of the technology related scales averaged out to around five among all 175 participants, which in and of itself is a significant find. Furthermore, I would like to point out that even when scores regarding comfort in using technology may have been comparatively low, value seen in technology remained high. This indicates that even if a student may not feel as confident in utilizing new or difficult technologies, they still recognize the value that technology can add to life and to a learning environment. Responses to questions regarding enjoyment of technology were also consistently higher than technology comfort, which suggests either that students might enjoy using technology, whether or not they feel technologically adept, or that students enjoy using the technologies with which they are comfortable. It is fairly obvious, however, that although student comfort in using technology was marginally lower than their enjoyment of and value seen in technology, they still felt overall very positively toward technology and the role it plays in their lives.

The effect of gender. Although attitudes toward technology were fairly positive overall, I did find several factors that contributed to or affected how students reacted to technology. Possibly most surprising was the extent to which gender affected these attitudes. Males consistently rated themselves higher on the technology comfort and value scales than the females. Although there is a long-standing stereotype that men are generally more tech-savvy than women, it is not a stereotype that holds true for me personally. Especially with the normalization of gender-stereotypes, I hadn't expected any of the technology scales to prove significantly different when compared between genders. Even though most of them were not significant

($p < .05$) from iteration to iteration, student enjoyment of technology did prove to be significant. According to the regression, differences in outcome attributable to gender are significant but yet not the most important factor in determining how students feel about technology, and teachers should keep this factor in mind when they use technology-based curricula. If teachers are aiming for enjoyment in a digital language-learning exercise, it is possible that the effect from the use of technology will be less pronounced in the girls.

The effect of age. Despite the apparent relationship between gender and student attitudes toward technology was a bit of a revelation to me, I was not at all surprised to see the effect of age on student attitudes in this area. As hypothesized in Chapter 1, age was, in fact, the most significant factor in predicting overall attitudes toward technology. As shown in Table 9, the fact that comfort using technology significantly drops off after age 36, gives credence to the validity of the digital natives metaphor and the idea that students born after 1980 are more comfortable using technology than previous generations. Indeed, the youngest group of students responded with the highest confidence about their ability in using technology. Although their confidence level was not significantly different from the next older groups, it is still logical that they would have the highest level of confidence when working with technology. With the rapid evolution and distribution of technology, there are innovations such as smart phones that have always existed for that youngest group but were introduced when the other groups were in high school or college. Nevertheless, although the youngest group seems to be more at ease with technology, they do not seem to value it as much as the older groups. One reason for this might be that the older groups remember a time when smart phones, tablets, and even email did not yet exist, and so they do not take these tools for granted as much as students who have always had access to these technologies. Unfortunately, because this study was limited in scope and the number of

participants involved, it is not possible to make any generalizations other than to say that the oldest group reported significantly lower attitudes toward technology than the youngest two groups. Further study and exploration would be necessary to shed light on the more subtle differences in the age groups.

The relationship between Internet usage and technology attitudes. Age was indeed the single most important factor in predicting student attitudes toward technology. However, when other variables were introduced, I found that time spent online actually eclipsed the significance of age. That is to say, when observed together, the number of hours spent on the Internet daily was a more significant predictor of student attitudes toward technology than their age. This suggests that the more a person uses technology, regardless of age, the more positively they will regard it. In addition, the analysis of the data in this study revealed that the most important variable when predicting student enjoyment of and value seen in technology is how much time students spend online. This seems somewhat misleading because we have no way to observe the cause and effect relationship of these variables. Is it the case that students who use the Internet frequently come to enjoy it more, or is it that students who enjoy using technology end up using it more? From the particular questions in our survey instrument, we have no true way of knowing which is the case, although one might guess that it could be a little of both. A student who uses technology a great deal has more opportunity to see how valuable it can be as a learning resource, which then may result in an increase in its use.

The effect of school. The final variable to be discussed in relation to attitudes toward technology is that of school. The BYU students rated themselves significantly higher than did the ELC students on all but one of the major technology scales. In fact, school was the single greatest contributor to confidence in using technology, which led me to question what makes

these two groups different. When comparing the ages of the BYU students to those of the ELC students, we can plainly see that the BYU students were younger on average than the ELC students. Yet if the age of BYU students was the best predictor of their comfort using technology, then age should have been the first variable to show significance in the regression model.

Finally, all of the BYU students surveyed in both Iteration 5 and the test survey were studying Japanese at BYU at the time, and most of those students were either in Japanese 101 or Japanese 202. Although the effect that might have had on the results is impossible to predict, several generalizations can nevertheless be made about students who study Japanese at BYU, especially at the lower levels. One of the common groups found in these classes are the students who study Japanese because they enjoy Japanese media, specifically anime, manga, and video games. While it may be a bit of a leap to say that these students are more tech-savvy than others in their peer groups, these students frequently log a large number of hours on their computers and game consoles as part of their regular entertainment.

Homework Attitudes

Before analyzing students' reactions to a technology-based, language-learning program, it would be beneficial to understand how the students usually responded to their homework. In doing this, it becomes possible to observe how much of their acceptance or rejection of the new program may have been related to the program itself or simply a result of the students' feelings to any homework assignments they might be receiving in class. As such, several questions in the pre and post surveys related to the extent to which students liked their homework. The responses received on overall enjoyment of homework were overwhelmingly lukewarm. Although there was a slight leaning toward liking homework in most of the iterations, Iteration 5—the Japanese 202 students—averaged 3.5 on their attitudes toward homework, which is the exact middle on

the 6 point scale. It could be seen as encouraging that the students don't particularly dislike their homework, but conversely it also shows that there is room for improvement in constructing homework assignments that students find enjoyable.

In parallel with homework attitudes, students responded to survey questions about the materials that they use both in and out of class as part of their language-learning curriculum. They were more positive about the specific materials they used than about the homework that they received as part of the curriculum, which suggests that it is not necessarily the material they use that influences how students feel about their homework. Again, however, Iteration 5 proved to be the exception to this with a significantly lower reaction to learning materials. With a score of 3.83, they seemed to be only marginally inclined to like the materials and books they used in class.

Keeping the student reactions to homework in mind, we see some very interesting results in their responses to whether or not they preferred the ESL Silver experience to their regular homework. As seen in Table 11, Iteration 2 did not prefer the ESL Silver experience, Iterations 3 and 5 were fairly central with a leaning toward preferring ESL Silver, and Iteration 4 did prefer ESL Silver to their regular homework. In relation to their attitudes toward homework, two possible interpretations of what occurred are plausible. Students from Iteration 4 reported the highest scores on all three categories in Table 11, indicating that students who like homework in general seemed to like ESL Silver. When looking at Iteration 5, however, it is possible that students responded to JFL Silver more positively because they did not like their regular homework as much as the other groups, and thus were happy to try something new. More likely, however, is the fact that they are the highly self-selected and motivated group mentioned earlier that would be interested in any tool that offers increased exposure to their target language.

Looking at the data contained in Table 14, it is apparent that students who disliked the materials used in class also disliked ESL Silver, and those who strongly liked their language materials reacted much more positively to ESL Silver, the story it contained, and the language they learned during the program. Viewing this data in isolation would seem to suggest that the technology aspect of the experience was not a significant factor in determining attitudes toward ESL Silver. This still does not quite explain why Iteration 5 reacted as they did, however. Because there were so few of those students, further research in a similar setting with a larger sample size would be required to fully understand both their attitudes toward homework and their possible preferences of this type of curriculum.

Reactions to ESL Silver and Variables that Correlated with those Attitudes

When the hypotheses for this research study were initially developed, it had seemed that student attitudes toward technology combined with their overall comfort level in using technology would have had a significant impact on student attitudes toward a technology-based language-learning curriculum. The rationale for this assumption was that students who saw more value in technology would see the value it could add to their language-learning experience. And yet, the data analysis revealed that although there was a positive correlation between student attitudes toward technology and their attitudes toward ESL Silver in particular, attitudes toward technology were not related to attitudes toward ESL Silver. Even the observed correlations were only meagerly significant. Because of this, it was necessary to gain a greater understanding of how ESL Silver was implemented in the classroom.

The effect of iteration on ESL Silver. In looking at student attitudes toward ESL Silver as a whole, the most obvious outcome was with differences between iterations. Because the students in Iteration 2 reacted negatively toward ESL Silver and the other groups reacted

positively, it became essential to understand what may have been different about either the students or implementation of ESL Silver during Iteration 2. Although the Iteration 2 participants expressed significantly lower attitudes than the students in Iterations 4 and 5 on the technology attitudes scales, there was no significant difference between the students in Iterations 2 and 3 on those scales, and students in Iteration 3 did not express the same negative reactions as those in Iteration 2. The age ranges, male to female ratios, and array of native countries were all comparable to the other iterations conducted at the ELC, thus those particular attributes could not have accounted for the disparity in reactions either. There were only two other possibilities that could have resulted in such a drastic change.

The most obvious explanation for the negative outcome seemed to be the ESL Silver content. The program had been completed by Iteration 2, and as laid out in Chapter 3, there were eight total characters with multiple overlapping storylines. According to one of the teachers in this iteration, a few of the students mentioned that they were confused as to what was going on in the story, due primarily to the number of characters and an inability to distinguish story-relevant posts from non-relevant posts. This was rectified in later iterations where there were only five characters, demonstrating that story complexity was a major difference in implementation for Iteration 2. In addition to being confused by the story, one student in particular mentioned that he did not like the story because it seemed “too gossipy.” When I asked the teacher to elaborate on this, she said:

One student said that it feels like just gossip, so he didn't like reading it. When you read a book, you put yourself in the story, but if someone gives you a story that's supposed to be part of your environment, but it's not in the realm of your experience, it can be alienating.

They don't understand all the jokes about the bubble. I don't necessarily associate myself with that stuff, and so if you don't associate yourself with it, it seems like teenager talk.

More than that, it's like trying to pretend like it's part of your Provo life, but it's not who you are. It's like your being asked to use words you wouldn't actually say.

According to this quote, that particular student, and possibly others, was not able to immerse himself into the alternate reality experience. The story was not sufficiently engaging or relatable enough for him to feel comfortable in the digital environment. In contrast, Iteration 4's focus was on student postings rather than the main storylines of ESL Silver. Because the students were the primary creators of the content, it was highly relatable and they seemed to transition to a digital medium much easier than Iteration 2. And yet, Iteration 3 focused only on the ESL Silver content, and they had a more positive response to the program overall, which indicates that story could not have been the only issue with the Iteration 2 students.

As I continued to interview one of the teachers from Iteration 2, the most probable reason for their reaction to the program soon became apparent. The teacher herself had presented ESL Silver in a way that was most likely demotivating to the students. Even though she never said anything explicitly bad about the program, she never said anything good about it either. In her words:

In the beginning I was pretty skeptical when [ESL Silver] was presented in tech class. I didn't ever say anything bad about it. I didn't say anything particularly good about it. I just said it's an experiment. Just go ahead and do your best. You have to do it. I didn't praise or say bad things, but I just told them they should really do it because we want to see how it works. I just made them accountable and told them that they were going to be graded on it whether they liked it or not.

By presenting it as an untested experiment, it is possible that the students may have received the impression that it might not “work” as an effective language-learning tool. Although ESL Silver had been designed specifically for these students according to the rest of their curriculum and to fit in with their syllabus, the students did not understand that, and so they may have become biased against the program before even giving it a chance.

In analyzing the teachers’ implementation of the system, it seemed clear that although the teachers of Iterations 3 and 4 utilized the ESL Silver software in markedly different ways, their students responded to the program in relatively similar ways. There was no significant difference in student attitudes toward ESL Silver between Iterations 3 and 4, although teachers of the fourth iteration did express the opinion that the students had been rather enthusiastic about the program, which differed from what the teacher of Iteration 3 expressed. The students of Iteration 4 would frequently ask if it was time yet to do ESL Silver, indicating an anticipation and motivation for that portion of class. This seems like a reasonable possibility, given that ESL Silver was a “for fun” activity on which the students were graded based only on participation. It gave them a chance to express themselves in a controlled and closed environment closely resembling other digital social interactions with their friends.

In contrast to the iterations that took place at the ELC, JFL Silver was implemented rather differently. The lack of classroom discussion mentioned in Chapter 4 reflects very much what happened during Iteration 2, and yet student responses from Iteration 5 were the most positive out of all of the iterations. There are several possible reasons why this ended up being the case, the most probably of which is that Iteration 5’s sample group was very small and most likely highly self-selecting. Because the students were not required to participate in JFL Silver, and the amount of extra credit received for doing so would only marginally assist the students’ overall

grades, chances are that the students who participated were ones who were highly motivated to learn their language. They may have been the type of student who will do their own personal study outside of class, and those who would generally search for online materials to supplement their in-class learning experiences. Because of this potential for a high level of motivation, this group of students may have been predisposed to feel positively about this type of interaction as a means of practicing their language skills.

The effect of story. The other main factor that may have affected the outcome of the student attitudes toward the ESL Silver experience was the story. Based upon the interview protocols with the teachers of Iteration 2, it seemed that several of the students could not relate to the story as had been intended. When the creators were developing the story, they went to great lengths to construct a narrative that was highly relatable to the culture of the target language, which was English. In this way, the students would not only be experiencing authentic samples of the language, but also authentic examples of life in the target culture. There are many aspects of that narrative that would be highly relatable to college-aged Americans in Utah. The ELC students are not, however, college-age Americans. They have different paradigms of humor and engagement, which may have resulted in an inability for the ELC students to properly immerse themselves in the story. The romantic storyline, in particular, seemed to be off-putting to some of the students, which resulted in the removal of that story line for later iterations.

Conversely, having had experience being a Japanese 202 student, and being from the same native culture as the target population for JFL Silver, it is possible that the students could relate to the story created for the Japanese version of the experience. For the JFL Silver story, the narrative included elements that would be entertaining and interesting to the various groups who tend to study Japanese at BYU, and because of this, it may have been more captivating than the

story made for ESL Silver. Due to student differences in taste, culture, and experience, it is no surprise that it will be nearly impossible to please everyone with one story, but it is valuable to recognize that an engaging story for this type of project would need to include elements of the target culture presented in a way such that it would be easy for the students to relate. Indeed, one might even say that such an approach is desirable, given the importance of having the target language be part of the language learning experience.

Other variables that contributed to student attitudes toward ESL Silver. Although it is quite obvious that the specific iteration in which students participated was the most significant factor in predicting how they reacted to ESL Silver, it is interesting to observe the other elements that seemed to have a significant correlation to the outcome. Table 15 shows that the next most significant factor in predicting student attitudes toward ESL Silver was the extent to which they liked learning their language. Students who reported liking learning English reacted more positively than those who did not like learning English with the same level of interest. This trend held true for student attitudes toward the language learned throughout the program as well. This adds further support to the theory that students who are already motivated to learn the language enjoy the tools that help them achieve their goals more than the students who are not as enthusiastic about their language. In addition to general attitudes towards learning a language, it became apparent that attitudes toward homework did indeed show significance in predicting student attitudes toward the ESL Silver experience. Students who indicated that they liked doing homework also responded more positively toward ESL Silver. These are students who like to learn and they see the value in the tools that help them achieve their objectives.

Because iteration seemed to completely eclipse all other factors in predicting attitudes toward ESL Silver, it was crucial to see what would happen if the data from Iteration 2 was

excluded as an outlier. That implementation of the experience had been so different that its effect may have been overshadowing other possible factors. And indeed, regression analysis of only Iterations 3 through 5, revealed that general attitude toward technology does seem to have a part to play in predicting how students reacted to the program. With respect to the idea of story, those students who enjoy technology tended to like the story of ESL Silver more than those who did not have the same level of fondness toward technology. Furthermore, overall attitude toward technology was a significant factor in predicting both overall attitudes toward ESL Silver and student attitudes toward the language they learned from the experience. Understanding this, it is easy to conclude that attitudes toward technology do, in fact, aid in predicting attitudes toward a technology-based curriculum, but that the way the program is implemented has the power to supersede this either.

Suggestions for Further Research

The limitations to the study as well as the results of the several implementations of ESL Silver suggest several areas for research in this area of language acquisition in the future. The first possibility for future research relates to how ESL Silver might be used for best effect in the future. Based upon the reactions received from students and teachers alike, it seems as though this particular system and perhaps other similar systems are best received when the student have some level of structure to the experience, but not so much that it becomes another program that they are required to complete. To this end, it would be interesting to follow the suggestions of the teachers from Iteration 4 and implement ESL Silver with only three to five days' worth of story material. Once the students are accustomed to the format of the website as well as the expectations of the experience, the students could then assume complete responsibility for the creation of content for the remainder of the experience. This approach would alleviate issues in

creating a story that could be appealing to all students by leaving topics of discussion and blog posts up to the students themselves. If the ESL Silver experience were to be implemented in this way, it would be imperative for the teacher or teaching assistant to utilize the error correction tool to provide feedback to the students. In this way, the students would only be exposed to correct samples of the target language, which is a necessity in the use of ESL Silver as an effective pedagogical tool.

The next suggestion for further research in this area would be to implement the JFL Silver program with a larger group of students so that more representative data could be gathered. The small sample size of respondents for Iteration 5 became a very restricting limitation. In order to more accurately compare that group of students to the others with which ESL Silver was implemented, it would be necessary to utilize the system in another Japanese 202 course. As part of that implementation, it would be interesting to observe the effect of actual in-class integration of the JFL Silver experience.

My final suggestion for research in the future would be research into the same student attitudes toward technology, homework, language, etc. investigated here in such a way that would allow for the possibility to indicate causation, rather than only correlation. With a larger amount of data to draw from, which data would be derived from a well-designed experiment using ESL Silver or a similar system, it would be possible to gather sufficient data that would demonstrated a relationship between independent and dependent variables. Regression analysis used in such a study would enable future researchers to assess more accurately the effect of various variables that influence student attitudes toward technology and demonstrate how those variables affect the use of technology-based tools for language learning.

Conclusions

Working with the teachers. There are several important lessons to be learned from this study. The first is in the area of teacher participation in implementing a curriculum. It would seem that the teachers who used the ESL Silver program received adequate training on the program and its use, but more care could have been taken in ensuring the correct implementation of the software. Although teachers do not necessarily need to be overly enthusiastic about the curriculum they use, the teachers must believe that it is effective and communicate that to their students. If the students feel like the teacher does not believe in the program, then they will not believe in it either. It also seems as though the most successful implementations were the ones in which the teachers made the program work for their class, especially in the case of Iteration 4. The fact that those teachers saw how ESL Silver could benefit their students seemed to yield very positive results on student responses to the survey as well as teacher responses to the interview protocol.

Knowing that teachers may be the deciding factor in the success or failure of these types of curriculum, they should play a greater role in the curriculum development process. If I were to participate in making another program, I would do so only after thorough discussion with the teachers about what they believe their students need and what they themselves need as instructors. The instructor is present in the classroom on a daily basis, and understands the students and their needs more than the administration or a team of curriculum developers. The teachers surveyed were unanimous in stating that they often felt overwhelmed with the number of institutional requirements for their classes, and the addition of an experimental curriculum added to their already full work load. Strict rules in the area of language certification and assessment are such that it is necessary to have a greater deal of communication and support

relating to the development of language curricula, especially since the end goal of language instruction is not a grade or certification, but the ability of the students to communicate in the target language.

Helping the students. With the wealth of language-learning materials that are being produced, and the tools available through new technological advances, effective support for students in accomplishing their language related goals is now more possible than in years past. It is vital that we as educators listen to our students, assess their language-learning needs, and provide them with access to the tools that will be most beneficial from a motivational standpoint as well as a language-learning standpoint. Students who enjoy the materials they use in their language classrooms as well as the ways in which those materials are presented seem more likely to want to engage in the language-learning experience. With the obvious link between time-on-task in language-learning and the linguistic proficiency that is its result, it seems that offering students engaging and motivating curricula would lead them to spend more time immersed in the target language. Unfortunately, however, there is sometimes a disconnect between what students want to learn and what teachers want to teach or what will actually be beneficial from a pedagogical standpoint. Nevertheless, balance between these sometimes opposing wants and needs should be a goal of the highest priority. By listening to the voices of the learners and adapting instruction accordingly, I believe that we can please the students while maintaining high standards of language pedagogy. This has the potential to lead to what most will believe to be the ideal or even optimal outcome: an increased number of successful language learners.

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Appendix A: Interview Protocol for Teachers of ESL Silver

Time on Task in Class

How many days in a week did you discuss ESL Silver at all?

Of those days you discussed it, how much time was spent on ESL Silver?

How much time did the class spend in the computer lab each week for ESL Silver?

Activities in Class

When you worked with ESL Silver in class, what kinds of activities did you do?

Reading?

Comprehension?

Discussion?

Other?

Homework

What types of homework assignments were students given regarding ESL Silver?

How often did students have ESL Silver homework?

How were students evaluated on ESL Silver?

How are students evaluated on a normal textbook in class?

Teacher's Interactions with ESL Silver

How often did you visit the ESL Silver website?

Describe your lesson preparation for ESL Silver.

How much value do you see in a curriculum using ESL Silver?

How confident do you feel with technology in general?

How much did you like or dislike ESL Silver?

What things would you change about ESL Silver for future implementations?

Having done the program once now, what would you do differently were you to repeat the program?

If given the choice, would you want to use ESL Silver or something similar in class again?

Knowing what you do about the program now, what advice would you give to teachers working with ESL Silver in the future?

Teacher's Perception of Student Interactions with ESL Silver

How invested did your students seem in ESL Silver?

What types of encouragement were they given to interact with the website?

Did you receive any feedback (positive or negative) about ESL Silver from your students? If so, what?

How did students perform on comprehension quizzes (if given)?

Appendix B: Full Survey Given to Students

Demographic Information

Please enter your name. Your information will be kept completely anonymous, and your teacher will never see your responses.

Are you male or female?

How old are you?

What country are you from?

What is your native language?

How much school had you finished before beginning your current English class?

High school

College – 2 years

College – 4 years

Post graduate degree

Other (specify)

Do you have a job?

How many hours do you work per week?

Attitudes toward English Class

Please indicate how strongly you agree or disagree with the following statements.

I like my classmates

I like the size of my class (number of students)

I like the materials, books, and handouts we use in class

I like learning English

My native culture helps me learn English

My native culture makes learning English harder

I get frustrated learning English

Learning English is boring

Technology Use

When I hear the word "technology," I think about: (write as many responses as come to mind)

Do you have a computer at home that can access the Internet?

Do you have a cell phone that can access the Internet?

Please answer the following questions about your computer use:

How often do you log on to social networking sites (Facebook, Myspace, Twitter, etc.)?

How often do you use computers to study English?

How often do you use the Internet to assist in your school work?

On average, how many hours do you spend per day on the Internet?

Of your time spent online, what percent do you spend on:

Social networking sites (Facebook, Myspace, Twitter, etc.)

Email

Blogs

Watching clips on YouTube

Watching TV shows or Movies online

Doing schoolwork

Playing games

Other: (specify)

Attitudes Toward Technology:

Please indicate how strongly you agree or disagree with the following statements:

I am familiar with social networks like Facebook and Myspace

I am familiar with computers in general

I feel out of place when using technology

Knowing how to use technology is a necessary skill for me

It is important to know how to use technology

Learning about technology will help me do well in life

I feel confident with my ability to learn about technology

I like using technology

Technology makes me feel uneasy and confused

Technology makes me feel stupid

I feel uncomfortable using most technology

Once I start using technology, I find it hard to stop

I think using technology will be difficult for me

I do not believe the quality of education is improved by the use of technology

I use my knowledge of technology in many ways as a student

I don't expect to use technology much at school

Learning about technology is a worthwhile and necessary skill for students

I really enjoy using computers and the Internet to learn

I like using technology in my schoolwork

I am confident using technology as a learning resource

I am able to do as well working with technology as other students

Attitudes Toward Homework

Please indicate how strongly you agree or disagree with the following statements:

I like doing homework

I think my homework is helpful for learning English

My homework is relevant to my life

I like studying alone instead of with others

I am excited about doing my homework

I think my homework is boring

I always finish my homework

I have enough time to complete my homework

My homework prepares me for class

I know how to do my homework

Group work helps me learn better than studying on my own

The instructions I receive from my teacher are usually clear

On average, how many hours do you spend on homework each day?

What percentage of your homework time do you feel is effective for your learning?

If you could change your homework, what would you change?

Attitudes toward ESL Silver (*Only on post-survey*)

Please indicate how strongly you agree or disagree with the following statements:

I understood the story on ESL Silver

I liked the story on ESL Silver

The English I learned on ESL Silver is relevant to my life

I think ESL Silver is fun

ESL Silver helped me learn English

I still remember words and phrases I learned on ESL Silver

I was always able to find things on ESL Silver

The characters in ESL Silver were believable

I liked the characters in ESL Silver

I want to know more about the characters in ESL Silver

I prefer ESL Silver to my regular English homework

My teacher prepared me to use ESL Silver

I understood what I was supposed to do on ESL Silver

My teacher helped me when I had questions

We spent an adequate amount of time on ESL Silver in class

If you could change ESL Silver, what would you change?

If given the choice, would you rather participate in ESL Silver on ELGG or Facebook?

Appendix C: Student Attitudes toward Technology by Country

Country	<i>n</i>	Overall Attitudes toward Technology	Comfort in Using Technology	Enjoyment of Technology	Value Seen in Technology
Argentina	2	5.8636	5.5556	6.0000	6.0000
Bolivia	2	4.8182	4.8889	4.8333	5.0000
Brazil	7	5.3636	5.1429	5.6190	5.5714
China	3	4.9091	4.4444	4.8889	5.0833
Colombia	4	4.9091	4.7500	5.0833	4.8750
Haiti	3	4.8788	3.9259	5.8889	5.6667
Italy	2	4.6364	4.6667	4.5000	4.2500
Japan	5	2.7636	2.8222	3.1333	4.1000
Macau	2	4.2273	4.1111	4.6667	4.1250
Mauritius	2	5.1818	5.0556	5.3333	5.1250
Mexico	17	5.5775	5.4118	5.6863	5.4412
Peru	2	4.6364	4.6111	5.0000	4.6250
Russia	2	5.2273	5.0556	5.3333	5.7500
South Korea	33	4.4821	4.3300	4.7172	4.9167
Spain	4	4.8636	4.6667	5.0833	4.8125
Taiwan	6	4.8485	4.5926	5.0556	5.0000
Thailand	3	4.0000	3.6296	4.7778	4.6667
Turkey	2	5.3636	4.9444	5.5000	4.6250
Ukraine	2	5.8636	5.8889	6.0000	5.0000
USA/Canada	58	5.2618	5.2797	5.2241	5.4871
Total	161	4.9718	4.8571	5.1077	5.1957